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FRUIT GROWER

JANUARY

1946



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JANUAR

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AMERICAN FRUIT GROWER

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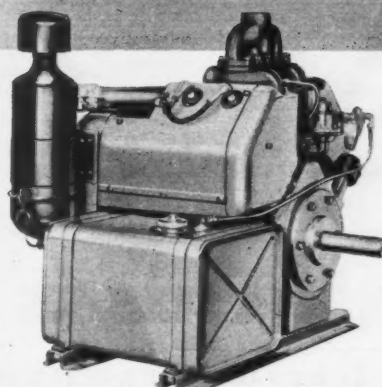
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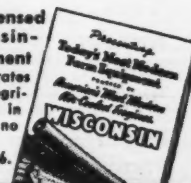
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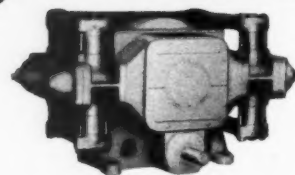


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AMERICAN FRUIT GROWER

LETTERS TO THE EDITOR

Everbearing Raspberries

Dear Sir:

In the Spring of 1944 I planted a few bushels of Indian Summer raspberries. They grew well but did not bear this Spring. In late September they set fruit but our early frosts did not permit them to ripen. Do you know if these raspberries set fruit every year so late? What shall be done with the canes which set the fruit?

Westwood, New Jersey E. Zimmermann

The Indian Summer raspberry is an "everbearer"—that is, it blossoms and produces fruit at the terminals of the current season's canes. These canes should then be cut back as is customary with any red raspberry and they will fruit the next year.
—Editor.

"Belting" Affects Fruit

Dear Mr. Editor:

Many years ago up in Illinois on my father's farm we had an apple tree that would be full of apples every year—then when they began to turn red, they would rot at the core and drop off.

My father finally belted the tree one spring to kill it but it refused to die, and that fall we had some of the finest apples I had ever seen.

Did the belting of the tree cause it to hold the apples or was this just a coincidence?

Newellton, Louisiana A. J. Moore

These situations are not easy to determine with certainty. If one ringed or girdled a tree it would result in a storing up of carbohydrates (such as starch) in the tissues above the injured part and should profoundly affect the branches and fruits above it.

The usual result is an increase in flowering the following year but such a phenomenon as you describe could also result.
—Ed.

The Yellow Gooseberry

Dear Sir:

I must take the time to tell you how much I enjoy reading your magazine and how I have made many friends through your column "Letters to the Editor."

I am very interested in the yellow sweet gooseberry but I don't know a thing about cultivating the gooseberry.

First, can they be cultivated from seed or do they have to be cut and planted in the ground in early spring like grapes? I will appreciate your helping hand.

Chicago, Illinois Miss A. Doll

Cuttings 6 to 8 inches long of the mature wood of the gooseberry inserted two-thirds of their length will grow in fair proportion, especially if the cuttings are taken in August or September and stored during the winter, as are currant cuttings. However, the gooseberry does not start as readily from cuttings as does the currant. Stronger plants are usually obtained by layering. Mound-layering is usually employed (the mounding of soil about the base of plants being done in June, or when the new growth has reached several inches). The rooted plants are cut from the mother plant and set in the nursery row for a year.—Ed.

Summer Pearmain

Dear Editor:

I notice that so much is said about the old-time apples.

We have tried every large fruit catalog

and have found no one who has the Summer Pearmain. To me it is the best summer apple I have ever eaten.

We finally found an old tree that my father got a number of grafts from, but they, of course, are not old enough to bear. Why has such a fine apple been discarded?

I remember a crab-like sweet apple—before spraying was thought of. The limbs were bending to the ground with uniform small brownish-red apples that were very juicy and delicious. We called them "chocolates." Could you tell me if it was a crab apple? If so, what kind? They kept all winter but never got soft.

Louisville, Kentucky Mrs. T. C. Wilson

The Summer Pearmain is an excellent apple but like so many old varieties has lost its appeal. Most people do not know apple varieties and since it is a long job to educate them, commercial orchardists grow the few that are known and will sell. Eye appeal is the chief thing in commercial varieties. However, Summer Pearmain definitely has a place in home orchards.

Have any readers grown "chocolate" crab apples?—Ed.

Apple Seedlings

Dear Sir:

I have apple seeds saved from matured apples consisting of a pint and a half of seeds. The varieties consist of Jonathan, Rome Beauty and Northern Spy.

What can you tell me about these seeds for propagating? Are they good for stocks, root systems, etc.?

Shanesville, Pa.

Ralph Spencer

The character of trees grown from seed is uncertain since the trees are seedlings and have not been propagated by layers or buds. However, since French Crab stock is scarce, local varieties are being used as stock. Spy seedlings in particular should be hardy and could well be preferred over most others. Rome Beauty also should be acceptable.
—Ed.

Cherry Trees on Plum Stock

Dear Sir:

I have two Montmorency cherry trees that are two years old. They are very fine specimen trees for two-year-olds. I also have two Greenwood sweet cherry trees that are one year old and six feet high, rugged specimens. I grafted all four of these cherry trees on strong growing plum stocks and I hope that you or some of your readers can tell me what influence these plum stocks will have on these cherry trees when they become of bearing age.

Also, I am planning on using a high power torch (a regular brush burning torch) around and under trees. I believe this 2000 Fahrenheit flame will eliminate many harmful insects. What do you think?

Quincy, Ill.

Charles R. Shade

The chief effect the plum stock will have on the cherry trees when they become of bearing age will be to make the trees better adapted to the heavier or wetter type of soil. Probably there will be little if any effect on the size of the cherry trees since the plum stock is of a vigorous nature.

A high power torch can be used to eliminate poison ivy around and under trees in the orchard. It will also destroy any insects that hibernate on the ground.—Ed.

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PEACHES BEAT APPLES

In '45 Production Race

AMERICAN FRUIT GROWER Presents
A Review Of The Past Year With A
Preview For 1946

THE year 1945 that played such havoc with the apple crop, brought forth the largest peach crop on record—81,954,000 bushels. This crop compares with 75,963,000 bushels in 1944 and 57,201,000 bushels—the 10-year average.

In the West, large peach crops were produced in all important States and wastage was less than in 1944 when about 10 percent of the crop was not utilized due to shortage of labor at the peak of the harvesting and canning season.

The ten Southern peach producing states also established a new record with a crop of 26,892,000 bushels. This compares with 17,193,000 in 1944 and 15,762,000 the 10-year average.

In the North Atlantic area, production was about average but 22 percent below the large 1944 crop. In the Midwest, Michigan had a record crop of 3,848,000 bushels, 7 percent larger than the 1944 production. In Illinois, rapid ripening and rains, occurring at the height of the marketing season, resulted in some losses. Production there is estimated to be 32 percent above the average.

Like Old Father Time, many apple growers close their books on the year 1945 and hope that the vagaries of the weather will be kinder to them this year. Although the months themselves have passed—their idiosyncrasies and their abnormalities will long be the subject of winter evening chats among fruit growers and their families.

It will be difficult to forget the early spring that ushered in fruit buds and blossoms as much as four weeks ahead of schedule in some states, and two to three weeks early in other sections. Then old man winter, who was just taking a nap, and not really hibernating, dealt his death blow to this brief promise of spring. Heavy snows in the north and midwest, snow flurries in the Great Lakes region, severe frosts spread from Kansas and Oklahoma eastward over the Ohio Valley and in many Appalachian Mountain



Hobart from Monkmeyer

sections brought reports of slight to severe frost damage to fruit. Even the West Coast States of Washington, Oregon and California reported from minor to considerable frost damage to apricots and early peaches.

And as if the elements hadn't already displayed enough cunning, the rains and winds of March and April, low temperatures, and orchard grounds too soft to permit the use of heavy spray rigs prevented many growers from applying pre-bloom sprays to their orchards. The final result of this condition was widespread apple scab. Many states also reported poor pollination because low temperatures and rain interfered greatly with bee flight—thus another disaster to the 1945 apple crop.

The results of fickle weather's handiwork were quite apparent to apple growers when they started adding up the bushels at harvest time. The Nation had a record small crop of apples—only 64,400,000 bushels—slightly more than one-half of the 1944 total of 124,754,000 bushels and even less than the short crop of 1943 which was estimated at only 89,050,000 bushels. Most of the decrease in production was in the Eastern and Central States which had only one-

third of the United States crop in 1945 in comparison with nearly two-thirds in 1944. The Western States were 8 percent below their 1944 production figures.

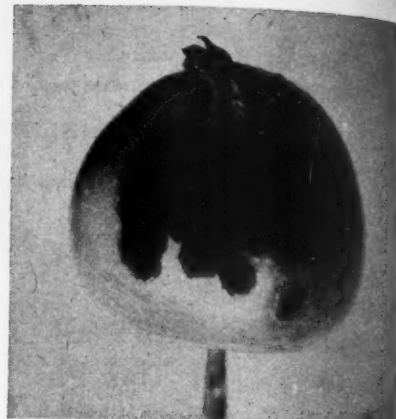
With production so short, utilization in all sections in 1945 was much more complete. Very low quality fruit, which normally could not find a market was readily distributed. This shortness of the apple crop has resulted in a lowering of the quality of the pack.

PEARS

The 1945 record pear crop, which is estimated at 32,866,000 bushels, is 15 percent above average but only 3 percent higher than 1944's large crop.

In the three Pacific Coast States production of Bartletts totaled 20,220,000 bushels—13 percent more than in 1944 and 38 percent above average. Practically all of the Bartletts had been harvested by early October. Pears other than Bartletts for these States, estimated at 6,087,000 bushels, are the second largest crop on record, and 9 percent above 1944. In Oregon, both Bosc and Anjou—the principal winter varieties produced larger crops than in 1944.

(Continued on page 32)



APPLE SCAB And Its Control

By A. B. BURRELL, Cornell University

NATURE dealt the apple orchards of the East some staggering blows in 1945. Freezes killed blossoms and distorted the early leaves. Cold rainy weather prevented transfer of pollen by insects and interfered with the development of many blossoms that received pollen. Persistent rains caused the worst outbreak of apple scab in over 20 years, and some elderly growers say, the worst in their lifetime. Rainy summer weather was conducive to huge populations of aphid and breakdown of lead arsenate with the release of soluble arsenic compounds, that injured leaves.

Scab did the most serious harm to the trees and will receive the main attention in this article. The following points will be covered briefly:

(1) What scab is; (2) Why it was bad in 1945; (3) Present condition of the trees, and prospects for scab and crop in 1946, and (4) What we can do about the situation.

What Scab Is

Scab is a fungous disease capable of damaging leaves, blossoms, fruits and (rarely) twigs. Many think of scab only as causing superficial black spots on the fruits, but this is one of the milder forms of the disease. Scab on blossom stems prevents the formation of fruits of such varieties as McIntosh. Scab on fruits may crack them open or cause them to drop off. Scab on leaves reduces photosynthetic efficiency, increases spray injury, and may lead to defoliation. When



Severe early-season scab causes fruits to drop, especially in such varieties as McIntosh. When scab spots are present at the petal-fall stage, as in the photo shown at top left, fruits fail to swell and the cause of crop failure may remain a mystery.

leaves drop off early, the trees may fail to bloom the next year, and are susceptible to winter-injury.

The causal fungus (*Venturia inaequalis* Cke. Wint.) winters in dead apple leaves on the ground. It produces ascospores in early spring, which are discharged during rains, float in air currents, and establish the fungus on leaves and other green tissues of the apple tree. New crops of ascospores are discharged during successive rains until 1 to 4 weeks after petal-fall. About 10-14 days after infection of young leaves or fruits, a new crop of spores (conidia) is produced, capable of causing new infections on leaves or fruits. The conidia move only as far as they are washed or splashed; they do not float from tree to tree. Conidia may continue to spread the disease throughout the summer.

Why Scab Was Bad in 1945

Among the reasons why scab was bad in 1945 were:

1. Duration and frequency of rains.
2. Reluctance to apply fungicides during the prolonged bloom, because of fear of further reducing the crop.
3. Unavailability of fungicides when the leaves appeared weeks ahead

When apple scab is as bad as this there is no point in using lime sulfur. The fruit is already lost and the very scabby leaves are easily injured. Repeated spraying with elemental sulfur would protect such leaves as may be free from apple scab.



of the usual date.

4. Difficulty in applying sprays or dusts at the usual stages of bud development in the face of rain, mud, shortage of help and aging of machinery.
5. Failure to appreciate how much more frequently or heavily than usual, fungicides must be applied in so rainy a season.
6. Reluctance to spend time and money spraying, when crop prospects were poor.

Condition of Trees and Prospects for 1946

Growers are concerned about how next year's performance of the trees will be affected. While it is not possible to predict with assurance, past observation of trees in similar condition may provide a few clues. It seems doubtful if trees that lost nearly all of their spur-leaves within a month or so after petal-fall will bloom in 1946; and such trees may be vulnerable if there should be severe cold this winter. The weak, secondary leaves that appeared on some spurs in July probably were of limited value. Relatively few trees were this bad; most of the worst ones were of the variety McIntosh. Trees that held half or more of their leaves through

July, and carried little or no fruit, probably have formed some blossom buds, the strength of such buds varying with the leaf surface. Varieties like Baldwin that are fickle about blooming may have been more adversely affected by partial defoliation, than others. Trees that had fair-looking foliage through August probably formed plenty of blossom buds, even though the leaves were imperfect. On the whole, it is believed that there will be at least a moderate if not a heavy bloom of apple trees in the East in 1946, though the lack of sunshine in some localities may have affected the differentiation of blossom buds adversely.

One point in the situation seems clear: there is a tremendous carry-over of the scab fungus. And moist, mild weather, extending into November, doubtless has been favorable to the fungus.

What We Can Do About the Situation?

Faced with this threatening situation, what can we do about it? We probably should avoid heavy fall or early-winter pruning as this would accentuate winter-injury if very

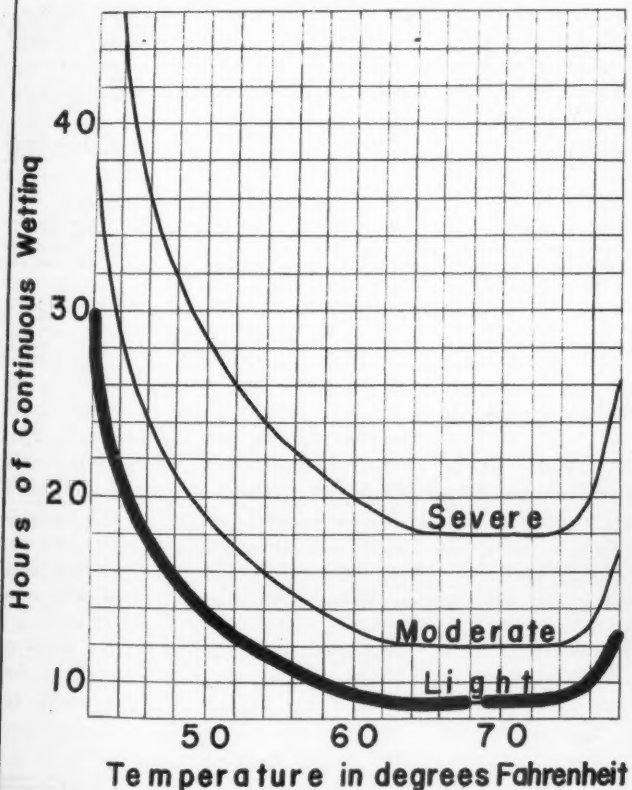
severe cold should occur. We should provide normal but not excessive fertilizer for next year; abnormally high nitrogen applications in 1946 will not materially offset the damage from scab and spray injury in 1945. Of course, we should avoid spray injury, but above all, we must control scab in 1946.

Killing the Carry-over

By spraying the ground in the orchard and adjoining fence rows about the time green tips appear on the trees in the spring, it is possible to reduce the quantity of ascospores discharged by 90-99%. This practice is of possible value principally for isolated orchards. If spring rains are barely long enough to permit infection, the trees on which appreciable numbers of primary leaf-lesions develop are those within a few hundred feet of the source of the ascospores. If rains are prolonged, ascospores may be carried thousands of feet, or even miles, but their abundance decreases with distance from the orchard where the dead scabby leaves are lodged. Spraying the ground in one orchard usually is not worth considering if the ground

(Continued on page 30)

Approximate Hours of Wetting Necessary for Primary Apple Scab Leaf Infection in an Orchard Containing an Abundance of Inoculum



Above—An unsprayed McIntosh tree which had lost nearly all of its spur-leaves from scab by late June.—Photographed August 1945.



Comparable McIntosh trees in which scab was controlled by 6 flotation sulfur paste sprays interspersed with 2 sulfur dust applications.

Replanting Experiences

A Grower and Horticulturists Discuss Replanting Orchards



Worn-out trees, such as these, consume work and materials. Since the production they give in return is not worth the effort or expense, their removal would be more profitable.

REPLANTING PEACH ORCHARDS

By M. A. BLAKE and O. W. DAVIDSON

New Jersey Agricultural Experiment Station

AN extensive peach breeding project initiated at the New Jersey Agricultural Experiment Station in New Brunswick in 1914 has made it necessary to grow peach trees continuously, and to replant them on the same land during the past 30 years. This work, together with requests from growers for information, resulted in a series of investigations dealing with the replanting problem.

At that time, three distinct theories prevailed as to the reason for the failure of replanted peach trees to grow well: (1) some contended the old trees removed certain minor elements, essential to the growth of young trees, from the orchard soil and that these were not replaced by normal fertilizing and manuring, (2) others believed that the old trees left in the soil residues toxic to young, replanted trees, and (3) still

others contended that depletion of the general orchard soil fertility was at fault, and that this could be replenished by the liberal use of fertilizers, lime, and manure.

Extensive tests with applications of minor elements in New Jersey orchard soils have failed to support claims that a lack of these nutrients was involved in the peach replanting problem.

Similarly, studies in soil and in sand cultures in New Jersey have consistently failed to demonstrate that old peach root residues are toxic to young trees.

The years of study devoted to the peach replanting problem in New Jersey have furnished abundant evidence that the primary problem is one of replenishing the general fertility of the orchard soil to the extent that young trees will flourish in it the first year. This is often difficult when the soil has become strongly acid, and low in nutrients and organic matter. Many growers often fail to realize that considerable time is required to build fertility into a soil.

It is also important that one appreciate the fact that newly planted peach trees have very limited root systems as compared with those of old, established trees. In order for the replants to survive and to grow well the first season, their roots must have access to an adequate supply of water, in addition to a good supply and balance of nutrients.

It was observed as early as 1909 that some nutritional disorder sometimes caused peach trees to develop symptoms similar to "little peach," a virus disease and was, therefore, called false little peach.

In 1937 this ailment was found to be due to a compound deficiency of phosphorus and potassium. The con-

(Continued on page 38)

REPLANTING APPLE ORCHARDS

By GRANT G. HITCHINGS
Nedrow, New York

IN replanting an apple orchard, I've found that actual experience is worth a lot more than theory. The orchard site that I am about to describe was first planted in 1804 to seedling apple trees grafted to old-time varieties. When my father bought this land in 1864, the orchard, which was used as a sheep pasture, was still bearing good apples, but they were too expensive to harvest.

In 1877, it was decided to plant more apple trees since the old orchard was beginning to fail. Thirty-six trees, which were bought and used as replacements, were planted very close to the sites of the original trees. After planting, my first job was watching the sheep to keep them from girdling the trees; this problem I solved by building three-cornered fences, and these young trees did fine.

In 1888, it was decided to remove the balance of the old trees and replant—also to plant additional land. I couldn't see any difference in growth or development of the trees in the old orchard land or new. This second planting of trees lasted until 1928 when the trees were cut down and replanted to the present orchard which is doing equally as well as any orchard on new ground that we have.

We consider now that the economic life of an orchard is from ten to forty years. After that date we think of the trees as boarders and that they should be promptly removed and that the ground should be replanted to up-to-date varieties.

Now for the lessons I've learned
(Continued on page 49)

AMERICAN FRUIT GROWER

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If farm products are marketed at a roadside stand, there is a distinct advantage in being able to sell more than one product.

PROS and CONS Of Diversification

By W. H. THIES, Massachusetts State College

WE live in an age of specialization. Industry with its mass production and its assembly lines, is a good example. If two kinds of automobiles or radios were to be made in the same factory, confusion and inefficiency might result, particularly if the individual workman were to alternate between widely differing jobs. The farm with two or more distinct enterprises may likewise be inefficiently operated unless the owner makes a careful choice of enterprises and conducts each one as if it were his sole responsibility. There can be no argument about the need for diversification where the principal aim is to provide a wide variety of products for family use. In Colonial times, it was essential that most of the things needed by the farmer and his family be produced at home. The farmer was also a manufacturer, as evidenced by the spinning wheel and the home shoeshop. But times have changed and the specialized farm with its single enterprise — apples, potatoes, milk, or wheat, seems to be replacing the general farm. But before we accept this trend as an established fact,

suppose we analyze the situation a little further. How about a combination enterprise, such as apples and dairy?

We have in Massachusetts quite a number of successful apple-dairy farms. We have many more farms on which the principal income is from the dairy and the orchard is partially neglected. One particularly fine apple orchard on a good dairy farm involves an interesting arrangement. Of the two sons who have assumed management, one is decidedly apple-minded while the other is cow-minded. They work together in haying as well as spraying, although each has his individual responsibility. Another dairy farm illustrates the opposite extreme. The owner of this farm had an ambition to own an apple orchard as well as a dairy, and after bringing a 5-acre block up to bearing age he discovered such a baffling array of pest control problems that he abandoned the orchard. Only after investing more than \$2,000 did he realize that he had spoiled a good pasture to grow a poor orchard.

It is a well-known fact that some

folks enjoy work with farm animals while others are by nature plant lovers. A person who delights to work around cows is almost certain to be more content and more successful in a dairy than in an orchard. Likewise, one who enjoys the company of hens may feel less at home in a strawberry planting. To stand at a lathe all day would be boring for some people while others consider it the ideal occupation. These differences, inherent in all of us, have a direct bearing on the question under discussion. Rare indeed is the individual who is as interested in poultry diseases as he is in the fungi which attack fruit plants. And it takes a more versatile person to master the details of both of these fields than to master one of them. This fact may suggest why some diversified farms are a failure.

But the reason for inefficient management of some combination farms goes deeper than personal likes and dislikes. A successful dairy must have day by day attention. Cows must be fed, watered and milked. An apple tree is different. It stands in the same place year after year and only the experienced grower senses the necessity for careful timing of operations. A few hours' difference in the time of spraying for apple scab may make a vast difference in the degree of scab control. Perhaps if trees were able to voice their needs, the grass which grows in the sod orchard would less often be used for purposes other than mulching the trees themselves.

Conflicting labor requirements are
(Continued on page 36)



ACCOUNTING FOR ORCHARDS

By MARTIN A. ABRAHAMSEN
North Carolina College of Agriculture

THIS article is not intended to be an accounting course in "one easy lesson" for orchard operators. Rather, it is designed to emphasize some uses to which a well-kept set of orchard records may be put. The writer has no inclination to propagandize for the cause of records. Farmers in their cautious and conservative way have a habit of "puncturing the balloons" of propagandists by putting any proposal to an "acid test"; namely, will it pay? It is from just such a standpoint that accounting for orchards should be considered. Records are no end in themselves. It is only as they help growers obtain a greater net income from operations that the effort expended and the expenses incurred in obtaining them are justified.

Hunches and Personal Opinion Will No Longer Do

Like the Old Grey Mare, Orchard-ing "isn't what she used to be." But in this case changes in the industry, if it is to keep pace with the march of events, seem to have been both desirable and necessary. For instance, growers are coming to lean more and more on mechanization for the performance of most cultural practices. Once the fruit is produced, problems of grading, packag-

ing, storing, and financing also have received increased attention.

A whole host of questions have arisen in the course of day-to-day orchard operations—the best answers to which will go a long way in determining possibilities for profitable operation. To mention a few, growers often come face to face with such perplexing problems as:

(1) Whether or not it is advisable to expand the orchard enterprise; and, if it is, what kinds of fruits and varieties might be grown most advantageously?

(2) Considering the size of a given operation, will it pay to buy a tractor or will reliance on horse work and manpower be more economical?

(3) At prevailing prices, which brands of spray material or fertilizer are the most economical?

(4) Should an individual operator construct his own storage plant?

(5) How, when, and where should fruit be sold for greatest net returns?

These and numerous closely related questions indicate that, as conducted in many parts of the country, orchard operations are becoming increasingly complicated. To be successful, policies must be based on sound facts and impartial evaluation of possibilities. Definitely sentiment,

hunches, and personal opinions must go out the window as a basis for making decisions that will influence chances of success on an orchard for years to come. The importance of basing policies on cool-hard figures is further indicated by the likelihood that the adjustments from a wartime to a peacetime economy will require increased operating efficiency.

Reasons for Keeping Records

An effective system for keeping records should provide answers for basic problems confronting individual orchardists. It is recognized, therefore, that accounting systems will vary from grower to grower. It is generally agreed, however, that an accounting system should include the following:

1. Provisions for keeping a history of past performance.
2. An appraisal of current methods of operation.
3. Budget plans for future operations.

History of Past Performance

As applied to orchard operations, records of this nature might well include: (a) the cost of developing bearing orchards; (2) production data by varieties, giving information as to yield per acre, quality of fruit produced, and returns; and (c) detailed information as to production costs by varieties, including expenditures for such items as labor, materials, and supplies. The practical application of keeping such records is illustrated by the experience of an apple producer in the Eastern Panhandle of West Virginia who kept historical information from the time he purchased his orchard some twenty-five years ago. By this means he definitely was able to detect two "boarder" apple varieties and to make arrangements to replace them.

Appraisal of Current Methods of Operation

An appraisal of current methods of operation calls for the setting up of "measuring sticks" to check on orchard performance. Such measuring sticks may be internal or external. The former deal with a comparison of year-to-year operations of the grower's orchard; the latter, with a comparison of other orchards. As a rule, effective comparisons with other orchards are dependent upon Experiment Station studies or Extension Service summaries of State Agricultural Colleges. To obtain results growers must be willing to submit all operations to critical and impartial examination and not seek to justify or cover up unsatisfactory performance.

A forthcoming publication, "Fac-

AMERICAN FRUIT GROWER



NATIONWIDE FRUITS

Apple orchards make an interesting and symmetrical pattern as far as the eye can see in the famous Appalachian Area.—
Photo — Appalachian Apple Service, Inc.

APPLES

Investigating Apple Measles

Extensive research on the cause of "Measles" in apples has been conducted for some years at the Agricultural Experiment Station of West Virginia University. Experimenters believe that the disease is especially severe on Stark's Delicious, a variety known to be of considerable economic value in this state.

Diseased trees are described as having irregular, dead, brown-colored pockets of tissues scattered throughout the interior of the bark. The trees sometimes become diseased and die shortly after planting. However, most of them linger on for many years and bear apples although their productive capacity is greatly lessened.

The experimenters, Anthony Berg and Genevieve Clulo of the Plant Pathology Department, report that the cause of the disease has not been

determined definitely. They have found, however, that it is not due to any parasitic organism, but may be due to an unbalanced mineral relationship, since it is more severe in certain orchards in a given area.

In recent years several hundred trees have been planted in orchards where this trouble is most prevalent. They have been treated with many chemicals and fertilizers, and samples of their leaves, bark, and wood have been analyzed to see if there is any difference in the mineral intake of the healthy and the sick tree. The investigators have noted that the leaves and bark of the severely diseased trees contain much greater quantities of certain mineral elements than those of the healthy trees grown on the same soil. Large numbers of trees are also being grown in the greenhouse, in soil taken from an orchard where the disease has been severe. These trees are then subjected to different treatments in the search for the cause of

the disease and for corrective treatments.

BERRIES

Fungus Disease on Blackberries

A fungus disease has recently appeared in the Evergreen blackberry plantings of Washington State, John Snyder, extension horticulturist, reports.

The most conspicuous symptoms of the disease appear as dark brown to black areas on the canes. These darkened areas are usually bordered with a dark red discoloration. The lesions may be small and irregular in outline, sometimes being no larger than the head of a pin; in other instances several lesions have merged and become continuous for a foot or more in length. All variations between these two extremes may be observed. The lower portions of the canes are usually more severely affected than the upper portions which are on the wire trellis.

At present no definite control measures can be recommended and

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until such time comes, only suggestions can be made. According to Dr. Snyder, these suggestions are based on present knowledge of the problem. Undoubtedly there will be changes in the control program as the work progresses. Suggestions are:

1. Remove the old canes immediately after harvest and burn. This should be accomplished in a relatively short time.

2. Spray the young canes, either with homemade bordeaux mixture 4-4-50 plus one pint of Penetrol, or liquid lime-sulfur (32 degrees Baume), five gallons to 100 gallons of water. This spray should be put on not later than the middle of October.

3. Another spray application with the same material used previously is suggested in December in order to maintain the spray deposit on the canes. We may find later that this spray is unnecessary, says Dr. Snyder, but until this time comes, it is a good insurance against spray removal by wet weather.

GRAPES

Grape Disease Control

Failure to cover the leaves and fruit thoroughly with the spray material and failure to get the sprays on at the correct time are cited by Dr. R. F. Suit, plant disease specialist at the State Experiment Station at Geneva, New York as the chief reasons why some grape growers do not obtain satisfactory control of diseases in their vineyards.

Citing five years' results of experiments on the control of black rot, downy mildew, and powdery mildew,

the major diseases of grapes in New York, Dr. Suit reveals that excellent results were obtained in controlling downy and powdery mildews with a 4-4-100 bordeaux mixture, plus 1 pound of rosin fish oil soap. The spray was applied before bloom, immediately after bloom, and two weeks after bloom, with thorough coverage of the leaves and fruit. Preliminary tests on spring applications of a 1 percent Elgetol solution made to eradicate the overwintering stage of the fungus in the soil did not result in any marked improvement in control.

The three applications of bordeaux mixture and rosin fish oil soap also gave satisfactory control of black rot in Dr. Suit's tests in 1940 and 1941; however, in 1944, five applications were required to hold this disease in check. Where powdery mildew alone occurred in the vineyard, excellent control was obtained with two applications of a 2-4-100 bordeaux mixture with 1 pound of fish oil soap, one treatment being made immediately after bloom and the second 10 to 14 days later. Other spreader-stickers in addition to rosin

fish oil soap which gave good results were S.E.C. oil, Spraysoy A, Grasselli spreader-sticker, and Triton B-1956. Seven insoluble coppers used in the experiments failed to prove superior to bordeaux.

In a study of varietal resistance to the three diseases, Clinton, Delaware, and Ives showed the least susceptibility for the five-year period, with Catawba, Golden Muscat, and Niagara showing the greatest frequency of attack.

PEACHES

Varieties for North Texas

Studies made by the Texas Agricultural Experiment Station show there are a number of peach varieties the North Texas home orchardist can plant to have an overlapping supply of fresh fruit in years favorable to peach production.

U. A. Randolph, horticulturist for the Fruit Investigations Laboratory at Montague, Texas has just issued Progress Report No. 973 entitled "Promising Peach Varieties for North Texas," which is the result of



Above—Here is one peach tree and its yield on the farm of S. B. Kickler, Sealston, Virginia.—Photograph — Ewing Galloway.



Left—David Ganshaw enjoys some of the Concord grapes picked on the 76-acre farm of his grandfather, Herman Ganshaw at Wilson, N.Y.—U.S.D.A. Photo by Knell.

tests on 45 peach varieties during their first four fruiting seasons. These experiments were prompted by the need for late blooming peaches to escape the hazards of late spring freezes. (Continued on page 48)

NEW PEACH SHIPPING CONTAINER opens wider markets

By T. A. MERRILL, Michigan State College



Above—Here is a display of the cell-type, half-bushel boxes which college researchers believe point the way to marketing a ripe peach without excessive damage.

Left—Peach display showing cell-type box with dividers removed (foreground) for pound sale purposes, and with dividers in place (center) for sale as a container unit. Left to right: Dr. T. A. Merrill of Michigan State College, who directed the experiments, Leila Renholt and Newman Knopper.

THE market for the nation's peach crop was expanded during the past four years of war by shortages and rationing of commercially canned fruits. The extent of this expansion cannot be determined or even guessed at, but the emphasis on home canning by the many federal, state, county and community agencies undoubtedly set many a housewife who had never before stained her fingers at such a task to canning a bushel or so of peaches. And it is reasonable to suppose that an assured supply of commercially canned fruits will cause many of these homemakers to be less inclined to this task.

It follows that profitable distribution of present high peach production will depend to some degree on the peach industry's capacity to stimulate bulk or pound sales.

The problem involved has been analyzed properly by growers, packers and distributors for many years. It may be summarized briefly as follows:

Homemakers buy peaches in pound lots primarily because they want to take them home to serve in



The cell-type container is turned into a bulk-sale display by lifting out the first divider. Sales from this box decisively outstripped those from the bushel basket.

the very near future—in a cobbler or sliced for dessert at dinner or at breakfast the next morning. Consumer acceptance tests have proved conclusively that green peaches—the "hard ripe" fruit of the usual market type—retards demand, while those in the "firm ripe" stage, in which the green ground color has turned to lemon yellow, not only find a wider acceptance but bring many customers back for repeat purchases. On the other hand, efforts to market a ripe peach through regular com-

mercial channels have failed because of increased spoilage. The higher retail prices which must compensate for this excessive spoilage deters the consumer quite as effectively as does a green peach, and in addition, the hazards involved may deter the distributor from an aggressive sales campaign.

Experiments with various types of shipping containers for the purpose of reducing handling losses while delivering to the consumer a riper peach were begun in 1943 by the Horticultural Department of Michigan State College with the Michigan Chain Stores Bureau and A & P Food Stores as the original co-operators. During the next two years other co-operators joined the project, which was climaxed this last season by extensive shipments, under normal commercial conditions, of a cell-type, half-bushel corrugated paper box.

This container has individual spaces for 96 peaches of from $2\frac{1}{4}$ to $2\frac{1}{2}$ inches in diameter adding up to a net weight of 24-25 pounds. It contains four layers of 24 peaches

(Continued on page 42)

For More Than Thirty Years



BLACK LEAF 40 HAS SERVED THE NATION'S FRUIT INDUSTRY

BLACK LEAF 155

● Controls codling moth, aphids, leafhoppers, bud moth, some leaf-miners, some thrips, pear psylla and grape berry moth.

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with DDT**

Fruit growers producing quality fruits continue to depend on it. Black Leaf 40 is effective against green and rose aphids, bud moth, red bug, leafhopper, pear psylla and codling moth. It has an established place in spraying programs on apples, pears, quinces, peachès, plums, prunes, cherries, currants, gooseberries, grapes, walnuts, pecans, and citrus fruits.

Black Leaf 40 has withstood the tests of time.

Protect the vigor of your trees from early spring attacks by aphids.

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SOLD IN 100% FULL STRENGTH PACKAGES FOR FULL STRENGTH

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Leaf 40**



Left—In 1917 these two Chinese Chestnut trees from the United States Department of Agriculture were planted on an Ohio farm.

Below—These 3000 seedlings grew from the seed obtained from the first two trees.

An Ohio Farmer GROWS HIS OWN CHESTNUTS

By JESSE D. DILLER and OLIVER D. DILLER

DURING the years 1915 to 1943, beginning even before the chestnut blight had spread from the Eastern States into Ohio, the United States Department of Agriculture distributed Asiatic chestnut trees to various cooperators within the State. The purpose of the distribution was to determine the adaptation of the Asiatic chestnuts to Ohio soils and climate, and their value as orchard and forest trees. From 1930 until 1943 nearly seventeen thousand seedlings were distributed in Ohio, mostly through the Department of Forestry with the Ohio Agricultural Experiment Station. Because of the severe drought in the early thirties and because of frequent planting on unfavorable sites, the cooperators lost most of these trees during the first and second year after planting. But in some cases the trees have become established, have been making satisfactory growth, are proving blight resistant, and are yielding crops of nuts. Since blight-resistant chestnut trees are now available in the trade, distribution by the Department has been discontinued, except to research institutions for cooperative experimental work.

In 1917 an Ohio farmer received only two 2-year-old Chinese chestnut seedlings for trial planting. He planted them on fertile, well-drained, moist

soil along a fence row near his dwelling. The trees were given no special attention except protection from livestock. Located in an open situation, they developed spreading crowns, which are conducive to nut production rather than timber growth. After 10 years the trees began to bear a few nuts. The yield increased yearly until now they produce a bushel of nuts each season.

For many years the cooperator used the chestnuts for food only, sharing them with visiting neighbors and with occasional interested strangers. One tree produces nuts about as large as an American chestnut; the other tree produces nuts that are slightly larger. Although the nuts are of good flavor and quality, they are not uniform in size and are not large enough for commercial purposes. Propagation of such trees by grafting is not warranted. In 1939 the writers suggested to the cooperator that he attempt to utilize some of the crop as seed for growing seedlings for testing this strain for shade and forest tree purposes. Here are his experiences and the methods he used in establishing a successful Chinese chestnut nursery, under farm conditions, from seed obtained from the two Chinese trees furnished him by the Department of

Agriculture in 1917.

In the autumn of 1939, with some misgivings, the farmer gathered a small quantity of nuts and stored them in his cellar. The following spring he planted them in a small garden plot. The seedlings resulting at the end of the first growing season so encouraged the farmer that the next year he collected the entire nut crop for seed purposes. He tried various ways of storing the seed. The most successful method he found was

(Continued on page 43)



Above—The farmer saved his chestnut seed and started a (Chinese) chestnut nursery.

AMERICAN FRUIT GROWER

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Look to the BEAN for this TWO-WAY Protection

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More protection per dollar because the "BEAN" has a long and proven record of extremely low-cost operation and maintenance.

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JANUARY, 1946

California Pruning

By An Old-timer

By GEORGE L. DUARTE, Hayward, California

PRUNING like religion is a delicate subject, especially to old-timers here. Most old-timers, be they orchardists or workmen, have a settled opinion on how to prune. So with due respect to them, I will present the view of one who was born and raised in orchards and will confine my decisions and explanations about pruning to the San Francisco Bay area, since every locality and climate has its own pruning needs.

I will start with a young tree just planted—say an apricot tree.

A Mr. John Doe goes to a nursery and buys his tree or trees in the early spring. He notices that some trees are short and stubby, but that most are long and whip-like. He is usually informed by the nurseryman that after planting, this tree must be pruned or topped off about thirty-eight inches from the ground (more or less), leaving just a stub with all brush (sprouts or spurs) removed. The reason for close pruning is to determine the future main crotch of the tree and cause the branches to sprout out near the cut in a position that will make it most practical to work around the tree with implements. Any low branches create interference with implements, and any high branches would make it unnecessarily high for picking and pruning.

The second year after planting it is observed that most of the branches have sprouted around the vicinity of last year's cut. A tree, like a house, must have a foundation. Your tree trunk is the foundation and you must now proceed to build the walls, or, in this case, branches and limbs of your tree, having a picture in your mind as to what you want this tree to be like as to shape, position of the branches, etc.

Most pruners have set opinions as to how many main limbs a tree should start out with from the trunk. I prefer three when possible and in some cases four. There is also disagreement as to whether these limbs should be encouraged to start in a closely knotted circle or whether one limb should be above the other. Personally, I don't think there is any difference as long as the tree is built up in the form of an inverted cone to encourage the greatest weight carrying capacity. Naturally, if the



branches spread out too much without at the same time climbing upward, each limb in time will have to be braced with sticks and poles to prevent breakage. On the other hand if the limbs are allowed to grow upward and outward in the form of an inverted cone, they are stronger, and if the old method which I continue to define here is followed, no bracing is necessary even with a bumper crop.

In starting the limbs from the trunk, and in later years with the laterals, one must always ask oneself—Where will this limb be twenty years from now? Will it be crowding another? Will it have to be removed

George L. Duarte, author of this article, is a native of California State. He has spent the major part of his life in orchards, as did his father before him. The unusual part of Mr. Duarte's orchard experience is that he has served mostly as a practical orchard worker—pruning on the average of six months out of the year. Mr. Duarte, who is from Hayward, California, claims the fruit picking championship for an unlimited district, since he says he has never found anyone he couldn't beat—and adds that picking is a sporting game as far as old-timers are concerned.—Editors.

in a few years thereby leaving a large cut or scar?


So the second year, you leave three or four limbs on the tree and try to space them as evenly as possible and top them off according to their strength. This is a very important item and misunderstood by many pruners. If these new branches are left too long, weak primary limbs

This fruit tree is being headed back with lopping shears.—U.S.D.A. Photo by Purdy.

are being built. If you cut too close you are retarding the growth of the tree and throwing the tree into a lot of useless strong water sprouts (new sprouts). Experience is the best teacher in this case and an instructor is advisable when one can be obtained. But as an example, I will give a rough idea as to what to do in an average case.

Assuming that the tree is an average three-year old (the second year after planting) and that the new branches sprouting from the trunk are four feet long, I would leave them about fifteen inches long. You may prune by the bud if you like and leave the topmost bud undamaged and in the direction you want the limb to go. All laterals are removed except any that you may see fit to leave that would not have to be removed after a few years. The branch itself is practically denuded with the exception of any small sprouts that are not in themselves large enough to endanger the setup of the tree. The tops of your main-cut limbs, however, should not have spurs or small sprouts unless they are strong ones that are again

(Continued on page 45)



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DRY**

Dinitro Spray in Powder Form

Dinitrol is a dinitro-ortho-cresol compound in powder form soluble only in oil emulsions and not soluble in water. It is recommended for the control of the following insects: Rosy Apple Aphis, Green Apple Aphis, Black Cherry Aphis, Bud Moth and Oyster Shell Scale.

Dinitrol and Dinitro-Sol are specifically recommended for application as dormant sprays to destroy the overwintering eggs of aphis on apple and sweet cherry trees and for the control of Oyster Shell Scale and Bud Moth of apples. A thorough application of Dinitrol combined with an oil emulsion, or the use of Dinitro-Sol in water, is the most economical method you can use to control aphis, which attack apple and sweet cherry trees during the growing season.

The proper application of either of these compounds when the trees are completely dormant will save you plenty of money which you would otherwise spend on Nicotine Sulfate during the growing season. Furthermore, the supplies of Nicotine Sulfate for 1946 promise to be even less than they were in 1945.

*Write for FREE folders describing results to be obtained
from the use of either Dinitrol-Dry or Dinitro-Sol-Liquid.*

**DINITRO-SOL
WET**

Dinitro Spray in Liquid Form

Dinitro-Sol, a sodium salt of dinitro-ortho-cresol soluble in water, is a specific insecticide for the control of the following insects: Rosy Apple Aphis, Green Apple Aphis, Black Cherry Aphis, Bud Moth and Oyster Shell Scale.

SHERWIN-WILLIAMS SPRAY MATERIALS

INSECTICIDE DIVISION



WEED KILLER HAS DEFINITE PLACE IN ORCHARD

HOME owners and those responsible for parks, cemetery areas and golf courses, fruit growers, and farmers all should become acquainted with the new weed killer, 2,4 dichlorophenoxyacetic acid, popularly known as 2,4-D.

2,4-D is a plant growth regulator and one of those synthetic organic acids referred to as a hormone. There are more than 100 hormones. Many have different properties. Naphthalene acetic acid or indolebutyric acid are well known to fruit growers who use them to "stick" fruit to the trees at harvest time. Tons of these fruit stickers are used every year.

Herbicide of Promise

Now along comes a new use for another one of the hormones, 2,4-D. Only a year ago, 2,4-D was reported as a herbicide of unusual promise. Some of these early reports were published in the *AMERICAN FRUIT GROWER* less than a year ago. There are weed killers of many kinds, but the general fault with them has been that when applied to lawns, for example, the grass more often than not was damaged, though not necessarily killed. 2,4-D was found to be deadly when applied to broadleafed weeds and at the same time, the grass escaped injury.

2,4-D is a white crystalline powder, insoluble in water, but when combined with ammonium, potassium, calcium, or sodium salts, it goes into a solution very readily. 2,4-D is remarkable in that concentrations of .1 percent are sufficient to completely kill a wide range of weeds commonly found in lawns, pastures, golf courses, and in the orchard.

In a series of experiments which were made this past summer, it was found that one application of a .1 percent solution applied at the rate of 2 or 3 gallons per thousand square feet of lawn was sufficient to completely kill all dandelions, plantain, both broadleaf and narrow leaf. We killed giant rag, pig weed, rag weed, poison ivy, and other common weeds which infest the fence row. Bind weed, too.

In lawns, a 3 gallon knapsack pressure sprayer will do a good job. In larger areas, we used a power

sprayer, rigged up with a 6 nozzle 10 foot boom, which delivered 2½ gallons per minute at 275 lbs. pressure. The nozzles were set to be about 30 inches above the ground and this permitted the spray to be broken up to a mist by the time it reached the ground. With this rig, the results secured were phenomenally good. We experimented with the gallonage per acre required to get a satisfactory kill and found in our plots that 50 gallons per acre gave just as complete a weed kill as twice that amount per acre.

Application Time

The right time to apply 2,4-D sprays is anytime after the temperature ranges around 70°F., usually in May or June, and on through into September. This applies to lawn weeds particularly and equally well to fairways on a golf course, cemeteries, and parks. For such plants as the bind weeds, poison ivy, sumach, etc., it has been the recommendation to apply 2,4-D when the plants are putting out a good supply of sturdy leaves.

Chemical companies will have 2,4-D on the market this year. There is a place for it in the orchard if carefully handled in the control of

poison ivy, Virginia creeper, and other noxious broadleaf weeds.

Do not, however, expect one year's application to do a permanent weed eradication job. Remember that the soil is loaded with weed seed, ready to germinate at the first opportunity.

2,4-D has several advantages. It is non-poisonous, does not present a fire hazard, does not corrode spray machinery, but spray machinery must be thoroughly cleansed before it is used for spraying trees or plants.

Memberships

Wm. Young, of Staunton, Virginia, member of the Board of Managers, A.P.S., and prominent in fruit growing circles in Virginia made this significant statement at the annual meeting of the American Pomological Society held at Chicago, October 6, "Fruit growers in general do not know very much about the A.P.S. and what it does. More publicity should be given to the affairs of the A.P.S. It is an organization for great good and I believe that if fruit growers more generally understood what the society has done and what its present program is, that many of them would become members."

The annual fee is \$5.00 per year. You get the annual report, a volume which generally contains upwards of 270 pages, and the published reports of the Variety Appraisal Committee as they appear.

Send your remittances for memberships to H. L. Lantz, Secretary-Treasurer, Ames, Iowa.

H. L. Lantz
Secretary



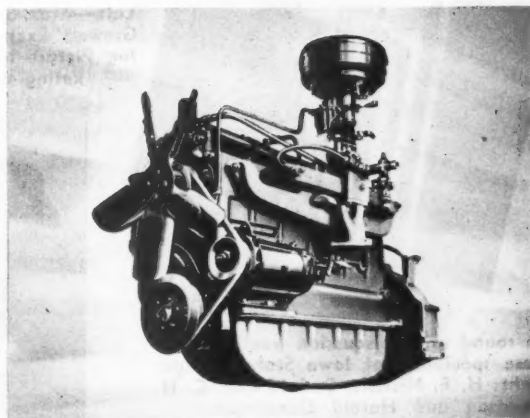
The dense growth of this poison ivy patch in an apple orchard indicates possible difficulty in eradicating the pest. Persistence and the new weed killer might do the trick.



Ask G.I. Joe about GMC Pulling Power

On every battle front G.I. Joe saw proof of GMC's pulling power. In the South Pacific, in temperatures as high as 130 degrees, GMC "six-by-sixes" hauled huge loads through hub-deep mud and sand. In Europe, GMCs played the leading role on the famous Red Ball Express. In Alaska's ice and snow, Burma's jungles and Italy's mountain trails . . . wherever heavy loads were pulled through heavy going . . . GMC trucks did the job.

G.I. Joe knows about GMC pulling power . . . and what he can tell you is mightily important to truck buyers. For GMC commercial trucks, in all models from ½ to 20 tons, have engines of the same basic design as their military brothers. They offer the civilian counterpart of the power, performance and stamina demonstrated by nearly 600,000 GMC Army "Workhorses."



The famous "270" engine, power plant of the "Army's Workhorse," also powers GMC models in the 3-ton range. All other GMC gasoline engines are of the same basic, war-proved design.

THE TRUCK OF VALUE



GASOLINE • DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION
JANUARY, 1946



Pictured above are three Michigan growers at the Michigan Meeting who had good apple crops in 1945. Left to right are: M. V. Gleason, Traverse City, Michigan; Kenneth Judd, Fuller Orchards, Lawrence, Mich.; R. F. Foreman, Foreman Orchards, Northville, Michigan.



Above—Dr. H. B. Tukey addresses the Michigan State Horticultural Society for the first time as Head of the Department of Horticulture at Michigan State College. Dr. Tukey's subject was "Investments in Horticulture."



Above are members of the Executive Board of the Michigan State Horticultural Society gathered at the Annual Meeting.



Above—Minard Farley, Jr. (left), Manager of the Michigan State Apple Commission, talks over marketing problems with George Friday of Coloma, grower and past president of the Michigan Horticultural Society.



Above—Michigan growers talk over fruit problems with a Wisconsin grower. Left to right: Mark Hersey, Casnovio; Sam Goldman, Sturgeon Bay, Wis.; E. J. Robinette, Grand Rapids; Burnett Hersey, Casnovio.

Left—Ray Hutson, entomologist, Michigan State College, leads a discussion on the use of DDT.

CAMERA CLOSEUPS At Michigan and Iowa Society Meetings



Left—Max Smith, Manager of Millburg Growers' Exchange, discusses the "Changing Picture in the Production and Marketing of Michigan Peaches."

Below—A round table discussion was conducted by these specialists of Iowa State College. Left to right: H. E. Nichols, Donald Coe, C. H. Richardson and Harold Gunderson.



Above—At the Meeting of the Iowa Fruit Growers Association are: (left to right) W. R. Kime, Vice President, Richland; R. M. Clark, Mitchellville; Victor Felter, President, of Indianola.

American Fruit Grower Photographs

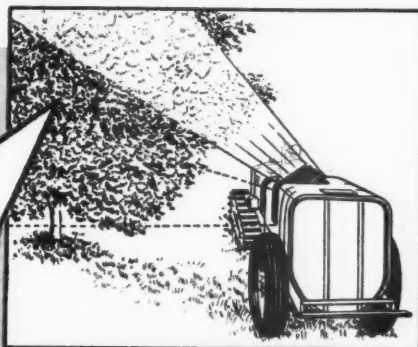
Professor T. S. Weir, University of Minnesota, discusses new apple varieties with two Iowa growers: (center) Henry Hohl of Lee County and (right) R. M. Clark of Mitchellville. Professor Weir is holding the Haralson apple in his hand. The varieties on the table are: (left to right) Haralson, Victory and Minjon, all originations of the Minnesota Experiment Station.



BIG PERFORMANCE *for* BIG ACREAGE!

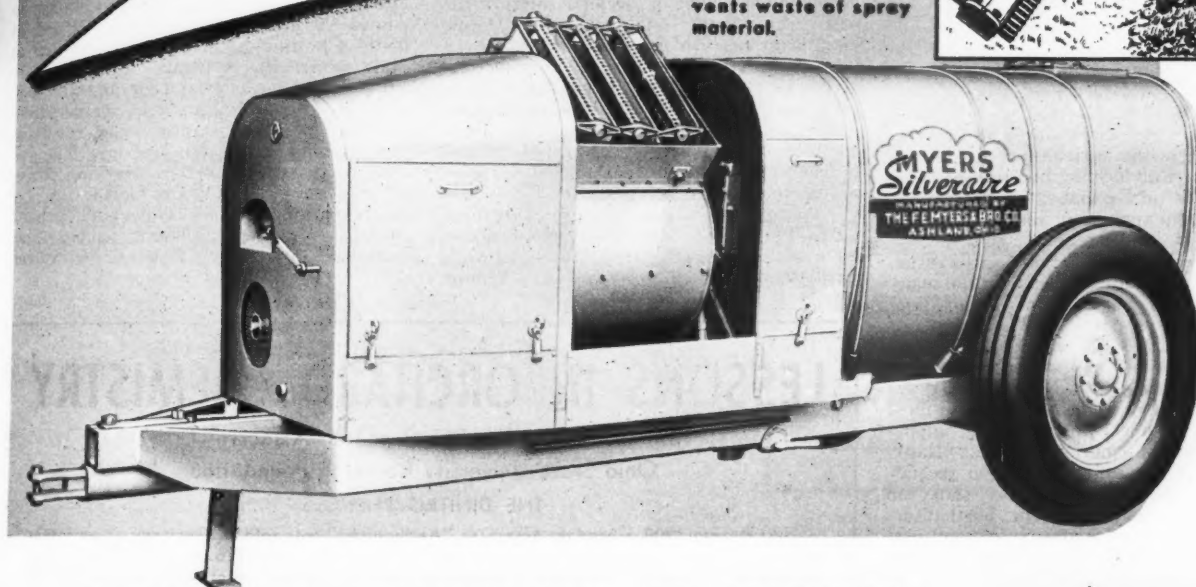
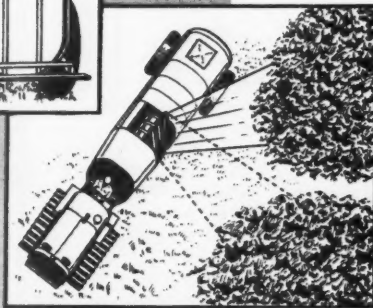
Fast, Complete Coverage—One-man Operation

Exclusive!
The New MYERS Silveraire
Sweeps the Spray Forward
and Backward as well
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Automatic up-and-down movement of nozzle head, and new air-blast principle, assure complete top-to-bottom coverage and penetration.

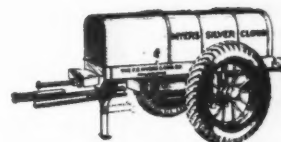
Handy push-button control directs spray when approaching and leaving trees. Means more thorough application, prevents waste of spray material.



UNBEATABLE COMBINATION OF FEATURES!

Myers' new Silveraire is built throughout for real one-man operation—for easy handling under all job conditions. The efficient, powerful engine was designed to cut down weight. Reduced weight and overall length, together with large-diameter wheels, make the Silveraire highly maneuverable even on wet, soft ground. Genuine cypress tank eliminates corrosion, gives long service, can be easily and safely repaired by owner.

The high efficiency obtained by Myers' adaptation of the air-blast principle—and many other advantages in performance—are provided in the new Silveraire at a money-saving price. Write for literature on this remarkable new sprayer and the complete Myers line.



The F. E. Myers & Bro. Co., Dept. D-84, Ashland, Ohio
Send your free literature on items checked below.

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| <input type="checkbox"/> Care and Maintenance of Pumps and Water Systems | | |

NAME _____

TOWN _____

STATE _____ COUNTY _____ R.F.D. _____



IDAHO—The fruit growers of Idaho have just wound up a most successful and profitable season and are planning their annual Horticultural Convention February 7th and 8th at the Hotel Boise in Boise.—*A. Harold Davidson, Sec'y, Idaho State Horticultural Association, Nampa.*

INDIANA—The strawberry sections report plantings for next year to be in very good condition with exceptional growth.

Most Indiana apple growers have sold out completely.

The unit packaging of fruits and vegetables is a coming thing as shown by the results of one summer's work. Apples packed in cellophane, two pounds to the bag, moved readily. Peaches packed one pound to the carton, then wrapped in cellophane, did not move as readily as apples.—*K. J. Fawcett, Sec'y, Indiana Horticultural Society, Lafayette.*

LOUISIANA—The Northern Louisiana Fruit Growers Association held its first annual meeting in the agricultural auditorium of Louisiana Polytechnic Institute at Ruston, Louisiana on December 13, 1945.

An excellent program included a discussion by Dr. John Bregger, Fruit Specialist in the Department of Soil Conservation from Clemson, South Carolina, on the many cultural problems arising in planting and maintaining an orchard. He also touched upon the question of what varieties of peaches, pears, and apples to plant.

Mr. Glenn Wallace of Nashville, Arkansas, long associated in the marketing of most agricultural products, discussed the important problems in marketing. Mr. Ralph Woodward, horticultural extension specialist at Louisiana State University, spoke on pruning, and Lynn Hawthorne, horticulturist at the North Louisiana Agricultural Experiment Station, summarized the experimental work on fertilizers and time of application for peaches.

The day's program was concluded with a message of interest to all fruit growers by Dr. Julian C. Miller, head of the horticultural research department at Louisiana State University.

MASSACHUSETTS—The Prisoners of War from Fort Devens rendered substantial aid in harvesting the very small crop of apples in the orchards of central Massachusetts and southern New Hampshire. Professor W. H. Thies of the State College Extension Service acted as liaison officer and won the hearty approval of the fruit growers for his efficient services.

Following the light crop of 1945, apple trees in Massachusetts have a heavy set of fruit buds. It seems very unlikely that we will lose a third crop in succession from frost, and growers are looking forward to a heavy crop and possibly low prices in 1946 followed by a light crop in 1947. In order to alleviate this situation, some growers will apply blossom thinning sprays next spring and are thinking of other means of reducing the 1946 crop. They are thinking of resuming grading their apples and keeping the poorer grades out of the market.

The winter meetings of the Massachusetts Fruit Growers Association will be resumed on the pre war basis in connection

with the Union Agricultural Meeting on January 8-9-10 in Worcester. Several prominent speakers from outside the state will be on the program. A large and enthusiastic meeting is expected. The discussions will center around adjusting the industry to postwar conditions.

The Department of Pomology will conduct a four-day conference at the Massachusetts State College on January 21-24. It will be of the nature of a refresher course and the latest developments in fruit growing will be discussed by members of the College staff.—*J. K. Shaw, Research Professor, Massachusetts State College, Amherst.*

NORTH DAKOTA—North Dakota farm people have shown a decided interest the past year in the establishment of home fruit plantings. In general, there has been little inclination to establish commercial orchards. Rather, the desire has been to set a few hardy trees of apples, crabapples, plums, and sandcherry hybrids. In more complete plantings, hardy grapes, gooseberries, currants and even named varieties of juneberries are being started.

Experiment stations on the Northern Great Plains, both American and Canadian, have released many new and worthwhile hardy varieties in the past decade. Without

these new, and in most cases superior, varieties a program of fruit for home consumption would be much less attractive.

Cooperating with this endeavor the North Dakota Agricultural Extension Service has prepared a series of six popular fruit leaflets dealing with core fruits, stone fruits, grapes, gooseberries and currants, strawberries and raspberries. In addition, a general leaflet and variety list carries the title, "You Can Grow Fruit In North Dakota!"

Shortages of suitable planting stock in reliable nurseries have been a limiting factor in the work to date.—*Harry A. Graves, Sec'y, North Dakota State Horticultural Society, Fargo.*

PENNSYLVANIA—The Pennsylvania Horticultural Association is scheduling its Annual Meeting for January 22, 23 and 24 in the Chestnut Street Hall Auditorium at Harrisburg, Pennsylvania. Emphases are being placed on postwar programs and possible growers' activities with special attention being given to processing involving both canning and quick freezing. The following are to cover these various phases of processing: Dr. Willis Gortner, School of Nutrition, Cornell University, Ithaca, New York; M. E. Knouse, Knouse Corporation, Peach Glen, Pa.; E. A. Meyer, (Continued on page 35)

LESSONS IN ORCHARD CHEMISTRY

By E. D. WITMAN, Research Associate
Ohio State University Research Foundation

THE DINITRO PHENOLS

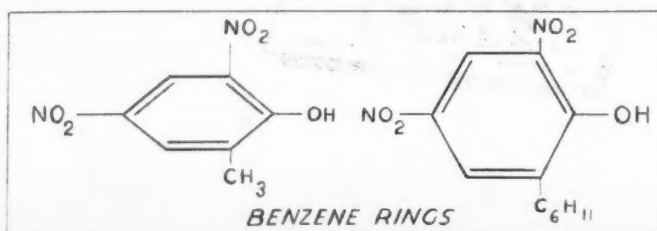
Just before 1900 a product known as "Antinonine" was sold in Germany as an insecticide. Its active ingredient was 3,5-dinitro-ortho-cresol. In 1926 a reduced oil spray containing 3,5-dinitro-ortho-cresol was recommended for dormant treatment. Then in 1936 a new dinitro phenol known as 2,4-dinitro-6-cyclohexyl phenol was introduced.

Today, the horticulturist uses both 3,5-dinitro-ortho-cresol (which could also be called 2,4-dinitro-6-methyl phenol), and 2,4-dinitro-6-cyclohexyl phenol in various modified forms. Some modifications can even be used for summer treatments, depending upon atmospheric conditions.

These two dinitro phenols are reasonably similar from a chemical standpoint—as shown by the structural formulae below. They both contain a phenol group ($-\text{OH}$), they both contain two nitro groups ($-\text{NO}_2$), and both contain a benzene ring. (See below). The difference between the two is that where one contains a methyl group ($-\text{CH}_3$), the other contains a cyclohexyl group ($-\text{C}_6\text{H}_{11}$).

These two chemicals are only slightly soluble in water, although they color water a brilliant yellow. However, by treating them with such bases as caustic soda or lime (which forms "salts" through the phenol group) they are soluble in water. In a water solution these "salts" are quite toxic to plants; in fact, so much so, that some of them are used as weed killers, defoliating agents, and blossom thinning agents. Solutions of the dinitro phenols in oils are also toxic to foliage and should not be used during the summer season.

The dinitro phenols are known to function both as contact and stomach poisons to a long list of insects. They are most widely used on citrus and fruit.



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with light-hauling worries:

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TWO GREAT FORD ENGINES

The 100 H.P. V-8 • The 90 H.P. Six
Three-Quarter-Floating Rear Axle

BODY DIMENSIONS: Length 78½ inches • Width
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New Ford Pickup Truck • Today's Ford Pickups are better trucks for *your* business. They're better trucks for *any* business. Exclusive Ford features and advancements make them roadworthy—streetworthy—farmworthy. Look below. You'll find advantages only Ford can offer—reasons why, year after year, registrations show "More Ford Trucks on the Road!"

MORE ECONOMICAL, MORE RELIABLE, MORE ENDURING THAN EVER!

TWO great engines—the rugged 100 H.P. V-8 with a score of important engineering advancements, or the 90 H.P. Six, for jobs that call for economical stop-and-go driving. Truck-type frame. Side-mounted springs. Three-quarter-floating rear axle with straddle-mounted pinion and 4-pinion differential. Four double-action shock absorbers. Note the generous dimensions of the heavy-gage steel Ford Pickup body, shown above—45 cubic feet of load space—wide enough for easy flat-loading of such 4-foot units as plywood or plasterboard (no wheel housings). Floor is heavy-gage steel-surfaced, with formed skid-strips and hardwood under-flooring. Tailgate, strong and rattle-free, swings full-down for loading.

Priorities No Longer Needed.  See Your Ford Dealer!

FORD TRUCKS



A common symptom of arsenical injury: killing of leaf tissue at margin and at break in cuticle from scab or mechanical injury. Over a period of weeks, lead arsenate on the leaf slowly decomposes, especially in a wet season.

Apple Scab and Its Control

(Continued from page 11)

in adjoining or nearby blocks is not sprayed.

Ground-spraying requires 500-600 gallons of solution per acre. The most widely tested material is Elgetol at 2 quarts in 100 gallons. The cost of the dilute solution is somewhat over \$1.00 per 100 gallons. Chemically, Elgetol is sodium di-nitro ortho cresylate plus a penetrating agent. Doubtless, there are numerous other chemicals that would be as good or better. Some mixtures that have given promising results experimentally as a ground spray for scab are 100 pounds of sulfate of ammonia in 100 gallons of water, or nitrate of soda plus a penetrating agent. Most growers would not want to put so large an amount of nitrogen on their orchards. Dr. G. W. Keitt of the University of Wisconsin at Madison, who is largely responsible for testing eradicant ground sprays, has developed a wide, stationary hori-

zontal boom for this purpose, for use on level land. On a boom, nozzles giving a flat spray probably are preferable to those producing a cone. Some growers spray trees and ground with $\frac{1}{2}\%$ Elgetol on a single trip through the orchard, this strength being adequate to kill aphid eggs on the twigs. At best, ground spraying is an expensive supplement rather than a substitute for growing-season sprays for scab, and up to now, has not been extensively practiced in the Northeast and perhaps never will be. Extensive experiments on ground spraying have been conducted by D. H. Palmiter and J. M. Hamilton of the N. Y. Agricultural Experiment Station at Geneva.

Growing-season Sprays

The timing of scab sprays is all-important. Unless there is conclusive evidence to the contrary, one should assume that the ascospores are ripe as

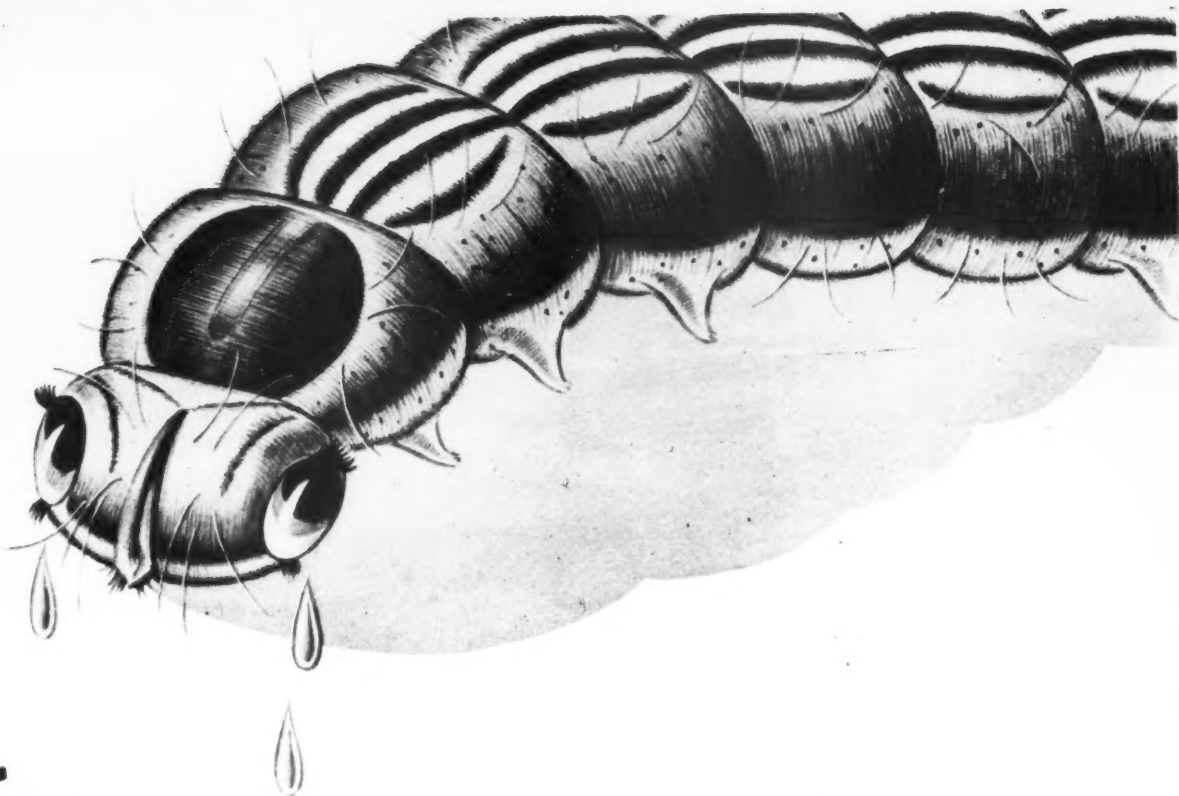
soon as there is green tissue on the tree.

The commonest plan formerly was to spray for scab when the apple buds are at particular stages of development, as "delayed dormant", "pre-pink", etc. While often giving good results, such a system fails completely in a rainy year like 1945. Any general plan must be modified from day to day and even from hour to hour. Spray service organizations advising the growers attempt to do this, but final decisions must be made by each grower. The basis for such modification is a knowledge of the relation of weather to development of scab. Early field studies by Wallace and others in New York and greenhouse studies by Keitt and his associates in Wisconsin demonstrated some fundamental relations between rain, temperature and scab infection. From field records of time, temperature and amount of infection over a period of years in western New York, Dr. W. D. Mills of Cornell ascertained the actual wetting at various temperatures for light, moderate and severe primary infection. The chart shown on page 11 is taken by permission from Cornell Extension Bulletin 630, written by Mills. Many a New York grower has posted this chart on the wall of his office or spray shed.

If an elemental sulfur* spray or dust is applied before the leaves have been wet long enough for scab infection to have taken place, it prevents scab. When necessary, this may be done during rain, preferably not a downpour. For example, if the temperature is 50 degrees F., one may control scab if such a dust or spray is applied before the leaves have been wet 14 hours. If the temperature is 65-70 degrees F., the sulfur must be applied before the leaves have been wet 9 hours. If applied later, it may reduce the amount of scab that would become established in the latter part of the rain, but some lesions will appear. It is customary to use only a fungicide when spraying during rain; it is doubtful if most insecticides would function during the wet period or leave enough residue to justify their inclusion.

(Continued on page 39)

*An elemental sulfur fungicide is one in which the effective agent is the element, sulfur. Fine particles of this element are applied as a dust or as a suspension in water. Dry wettable sulfurs and flotation sulfur pastes are in this category. Lime sulfur is not; it is essentially a true solution of chemically-combined sulfur in the form of polysulfides of calcium. When it dries on the tree, lime sulfur breaks down into elemental sulfur and lime, so its residue resembles that from elemental sulfur sprays. Material sold as dry lime sulfur is chiefly polysulfides of calcium, but an appreciable portion of its sulfur is present as elemental sulfur.



EVER SEE A FRUSTRATED FELTIA ANNEXA?*

Then take a look at this fellow. He's all mouth and appetite. Every year he and other climbers destroy thousands of dollars in crops. But just now he came face to face with the bitterest experience a cutworm can suffer—a Tree Tanglefoot barrier between his devastating gluttony and the tender, thrifty foliage upon which bumper crops depend!

Protect your tree and vine income with an early, easy application of Tree Tanglefoot . . . It goes on in a matter of minutes—it costs so little—and it assures positive, genuine, dependable, safe, all-weather protection against climbing, crop-destroying insects for months!

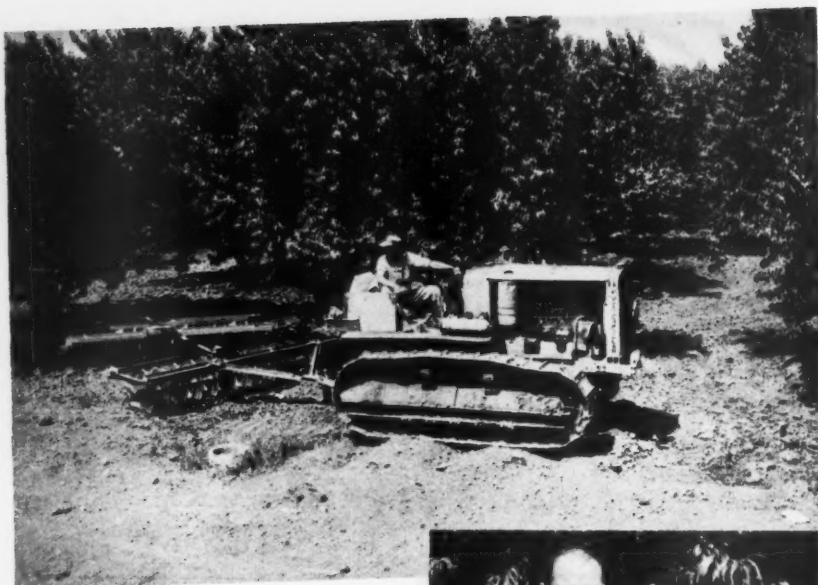
*** CUTWORM TO YOU**

TREE TANGLEFOOT

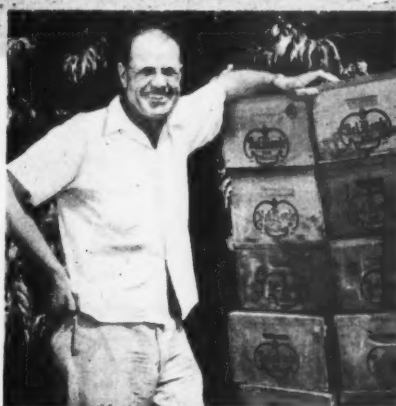
BAND EARLY—BAN WORRY!



TANGLEFOOT COMPANY • GRAND RAPIDS 4, MICHIGAN
JANUARY, 1946



This 10-year-old Diesel RD6 has done over 20,000 hours of heavy orchard work and is still going strong. It's shown pulling a 10 1/2-foot Killefer offset disk.



C. E. Denny, superintendent of Fancher Ranch, says: "We've got our order in for more 'Caterpillar' Diesels."

20,000-HOUR DIESEL D6 STILL GOES STRONG

... IN WORLD'S LARGEST CANNING PEACH ORCHARD!

California Packing Corporation's Fancher Ranch near Merced, California, is widely known as the world's largest canning peach orchard. From its scientifically tended 3400 acres of trees comes an annual pick of 20,000 to 30,000 tons of top-quality fruit—that rates wearing the famous Del Monte label!

Shown here pulling a 10 1/2-foot Killefer offset disk is one of the 7 "Caterpillar" Diesel Tractors on Fancher Ranch. This tractor is a 10-year-old Diesel RD6 that has done over 20,000 hours of work—and is still going strong!

The fact that this "long-timer" stays on the job indicates that its upkeep cost still is reasonable; that it can do its full quota of work in a fleet of much younger tractors.

The war period has allowed veteran "Caterpillar" Diesel Tractors to prove

(and keep on proving) what is in these tractors and behind them! Many a Diesel of this make that has paid for itself long ago in fuel dollars saved, alone, is still going strong.

Long life should be a powerful item with the man who's looking for the tractor to which he can hitch his fruit-growing future with confidence! There's a size of "Caterpillar" Diesel Tractor to fit your fruit-growing enterprise. See your "Caterpillar" dealer!

CATERPILLAR TRACTOR CO., PEORIA, ILL.

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ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT



The discharged veteran wears this emblem.
Remember his service and honor him.

PEACHES BEAT APPLES

(Continued from page 9)

Winter pear production in the Rogue River Valley has been very large this year and considerably above early season indications. In Washington, pears did not size as well as expected, largely because of warm weather. Some of the pears have been moved out of storage to make room for apples but there are many still in storage. Pears from the Pacific Coast States will continue to move to market throughout the winter. Carlot shipments from Colorado and Utah have been heavy, surpassing 1944's light movement by rail.

PLUMS AND PRUNES

California plum production is estimated at 71,000 tons compared with the record crop of 92,000 tons in 1944 and the average of 66,200 tons. The Michigan plum crop is now placed at 2,200 tons—only 35 percent of 44's crop and 45 percent of the average.

California dried prunes are estimated at 212,000 tons (dried basis)—33 percent greater than the previous short crop, and 3 percent above average. Weather was favorable during the harvesting and drying period. Maturity and dropping occurred within a shorter period than usual.

Total production of prunes for all purposes in Washington, Oregon, and Idaho is estimated at 146,400 tons (fresh basis) compared with 110,300 tons in 1944 and 142,930 tons the 10-year average. The crops turned out better than expected in Idaho and Eastern Oregon but not as good in Western Washington and Oregon. Hot, dry weather during the growing season in Western Washington and excessive September moisture in Western Oregon were unfavorable factors.

GRAPES

The 1945 grape crop is estimated at 2,804,500 tons—2 percent above the previous year's production of 2,736,550 tons and 13 percent above the 10-year average production.

California grapes, comprising about 95 percent of the United States crop in 1945, are estimated at 2,678,000 tons. This near-record crop of grapes in California compares with 1944's crop of 2,514,000 tons.

In Washington, an exceptionally good crop of grapes was harvested in the irrigated areas, but the crop was adversely affected by drought in non-irrigated areas.

A very short crop of grapes was harvested in the Eastern States. In the important States of New York, Pennsylvania, Ohio and Michigan, production totaled only 57,000 tons—58 percent less than the 1944 produc-

PLES

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tion of 137,200 tons, and 60 percent below the 10-year average.

CHERRIES

Production of sweet and sour cherry varieties combined is estimated at 133,360 tons in the 12 commercial cherry States. This is 34 percent below the 202,090 tons harvested in 1944 and 13 percent below the 1934-43 average production. Sweet cherry production was estimated at 93,770 tons in 1945 in comparison with 85,300 tons in 1944. The 1945 production is the highest on record since the beginning of the present series of estimates in 1938 by the U.S.D.A. Bureau of Agricultural Economics. In contrast, sour cherry production in 1945 was only 39,590 tons—the lowest in a similar series.

APRICOTS

Total tonnage of apricots in the three important producing States (California, Washington and Utah) is placed at 211,600 tons—40 percent smaller than the record 1944 crop, but only 2 percent below the 10-year average.

CITRUS

Prospective United States production of early and mid-season oranges is 50,530,000 boxes—a record crop and 7 percent larger than 1944's production of 47,233,000 boxes. A record crop of grapefruit is expected. The indicated production is 15 percent above the previous record in 1943-44 and 24 percent above the comparable 1944-45 crop.

A Florida orange production of 50,000,000 boxes is expected, compared with 42,800,000 boxes last year and 46,200,000 boxes in 1943-44. The early and mid-season varieties are indicated at 26,000,000 boxes—4,300,000 more than last season. Florida Valencias are expected to yield 24,000,000 boxes which is 2,900,000 boxes more than the previous record of last season. Florida grapefruit are indicated to be 32,000,000 boxes—1,000,000 above the previous record in 1943-44 and almost 10,000,000 above the hurricane-damaged crop of 22,300,000 boxes harvested last season. Limes are forecast at 200,000 boxes—only 50,000 less than last season, despite the heavy September, 1945, hurricane damage in Dade County, the most important lime area in the State.

Record crops are in prospect for both grapefruit and oranges in Texas. Grapefruit are forecast at 24,000,000 boxes compared with the previous crop of 22,300,000 boxes. Oranges are indicated at 4,800,000 boxes compared with 4,400,000 boxes last season.

Arizona also expects record crops of both grapefruit and oranges.

(Continued on page 34)

FACTS FROM THE SOURCE

The Geigy Company, **ORIGINATORS** of DDT Insecticides, believes that in fairness to the public, it should be made clear that dichloro-diphenyl-trichloroethane must be compounded with suitable carriers to be effective. Insecticides made from DDT are by no means "cure-alls" but are effective on a greater variety of insect pests than any insecticide yet known. Further, the scope of DDT's potential use is yet to be fully defined.

The development of effective DDT compositions and programs for their application calls for a high measure of scientific knowledge and skill. This can be achieved only through the cooperative endeavor of the chemist, entomologist and pathologist—plus extensive field tests to demonstrate the validity of laboratory findings under actual working conditions.

The Geigy organization, pioneers in this work both here and abroad during the past seven years, is able at this time to offer 10 tested-and-approved DDT formulations—5 GESAROL'S* for agricultural use and 5 NEOCID'S* for the control of insects affecting man and animal.

GESAROL
AK 50

(Especially adapted for potato and orchard pests)

NEOCID
BA 50

(A wettable powder for sprays and dips to be used in barns and on livestock)

GESAROL
DT 50

(For greenhouse, ornamentals and certain vegetable crops)

NEOCID
CD 50

(For use in dusts and powders for application in buildings and on livestock)

GESAROL
VD 50

(For use in agricultural dusts)

NEOCID
D 30

(For use in household and other sprays containing deodorized kerosene as a base)

GESAROL
E 25

(Use for agricultural pests when an emulsifiable liquid is preferred)

NEOCID
L 30

(For use in mosquito larvicide oils)

GESAROL
S 30

(For use in atomized oil sprays for forest insects or vapo-sprays on row crops)

NEOCID
M 25

(Use for flies and mosquitoes where an emulsion is desirable)

*Reg. U. S. Pat. Off.

PAGE 1



GEIGY COMPANY, INC.

ORIGINATORS OF
DDT INSECTICIDES

89-91 BARCLAY ST., NEW YORK 8, N. Y.

JANUARY, 1946

33

FOR ALL FRUITS—ALL CONDITIONS

ORTHO

SCIENTIFIC PEST CONTROL

REG. U.S. PAT. OFF.

Complete Spray Programs

APPLES—and the important SULFURS and SPREADERS

Two things are required of a sulfur spray—it must control fungus, and it must have the inherent quality of causticity control without causticity.

In ORTHO Spray Programs, sulfur and "ORTHEX" is combined according to individual orchard needs to fulfill these requirements.

Qualified ORTHO fieldmen will help you plan your program.

In many orchards in 1945 scab got a strong hold. Next spring much care will be needed to stop its inroads on the apple crop.



These sulfurs with "ORTHEX" provide even, complete coverage.

KOPPERS
FLOTATION SULFUR PASTE
MICRO-FLOTOX
WETTABLE SULFUR
in combination with
ORTHEX SPREADER ADHESIVE

Call in the ORTHO fieldman in your area,
or ask your Experiment Station for recommendations

PEACHES BEAT APPLES

(Continued from page 33)

Grapefruit are now placed at 4,500,000 boxes compared with 3,750,000 last year and 4,080,000 in 1943-44. Oranges are indicated to be the fifth record large crop in succession which reflects the increasing bearing capacity of Arizona groves as well as favorable weather and care.

In California, prospective production of Navel and miscellaneous oranges is 20,700,000 boxes—6 percent less than last season. Prospects are about average for new crop Valencias. Production of California Desert Valley's grapefruit is placed at 1,330,000 boxes—13 percent less than last season. The new crop lemons for harvest from now until November, 1946, are estimated at 13,900,000 boxes—11 percent more than the 1944-45 crop.

CRANBERRIES

Cranberry production for 1945 is now estimated at 640,400 barrels, 73 percent greater than the extremely light 1944 crop of 369,700, although only slightly more than the 10-year average of 631,660 barrels.

NUTS

The United States pecan crop is now estimated at 135,960,000 pounds—exceeded only by the 1944 record crop. Above-average crops are indicated for all pecan producing States, and only Florida, Mississippi, Louisiana and Texas expect reduction from 1944.

The 1945 walnut production is now estimated at 68,100 tons, 1 percent smaller than the 1944 crop but 18 percent above the 10-year average.

Estimated production of California almonds is 23,100 tons—the largest on record. Prospective production of filberts in Washington and Oregon is estimated at 4,990 tons—23 percent smaller than the crop of last season, but 48 percent above the 10-year average.

OUTLOOK FOR '46

Prices to growers for the 1946 fruit crops are likely to average considerably lower than the extremely high wartime levels of the three preceding crop seasons, according to authorities of the Bureau of Agricultural Economics.

Total noncivilian requirements for fruits from the 1946 crops will be substantially smaller than those of the past few years, mainly because of a greatly reduced force under arms. Shipments under lend-lease have been terminated and shipment for relief feeding are expected to be small, but commercial exports of fresh and dried fruits probably will be expanded.

AMERICAN FRUIT GROWER

APPLES

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With average weather and continued good production practices, slightly larger crops of fruits and nuts can be expected in 1946 than in 1945. Increased imports of fruits and nuts, especially bananas and pineapples, appear probable, as additional shipping becomes available. Also, increased supplies of other food and nonfood items will be available to consumers. With the prospects that consumer incomes will be somewhat smaller, the 1946 crops of fruits are likely to bring prices considerably lower than those of recent years.

STATE NEWS

(Continued from page 28)

Director of Fruit and Vegetable Branch, Production and Marketing Administration, U.S.D.A.; and Dr. Frank App, Director of Research and Development of Seabrook Farms, Bridgeton, New Jersey.

During the course of the meeting the newer types of insecticides and fungicides will be discussed by Doctors Lewis and Steiner of the Pennsylvania State College, whereas, the 1946 spray program will be outlined by Professors Kirby and Pepper of the Division of Agricultural Extension, Pennsylvania State College.

Realizing that production is only one phase of profitable fruit growing, the covering of marketing is being handled by L. L. Rummell of the Kroger Grocery and Baking Company, Cincinnati, Ohio; Lionel Newcomer, Berks-Lehigh Fruit Growers Cooperative; Carroll R. Miller, Appalachian Apple Service and P. C. Turner, Food Producer's Council, Baltimore, Maryland.

The Annual Meetings have not permitted a free discussion of topics not listed on the program. To remedy this situation a "Growers Free-For-All" is scheduled for Wednesday evening at which it is hoped that growers will raise questions of importance which have not been listed on the official program.—J. U. Ruef, Secy, State Horticultural Association of Pennsylvania State College.

TENNESSEE—The Fortieth Annual Convention of the Tennessee State Horticultural Society will be held at Jackson, January 16-17, 1946. On the afternoon of January 16, the Society will visit the orchard of President Paul B. Conley, Sr., at Alamo. Mr. Conley will address the Society on "Tennessee's Future as a Commercial Fruit Producing State" during the morning program. His own orchard is famous for producing a commercial crop of peaches each of the last fifteen years.

The Tennessee Peach Council will meet in conjunction with the State Horticultural Society on the afternoon of January 17. The Honorable O. E. Van Cleave, State Commissioner of Agriculture will also address the Society.—J. C. McDaniel, State Horticulturist, Nashville.

WASHINGTON—The apple harvest went off with surprising smoothness. Favorable weather and a very special effort on the part of growers and college men to train workers are in large measure responsible for having completed the apple harvest without appreciable loss. The State College working with the Farm Labor office early in the season laid plans for training inexperienced workers. First of all it was learned that both German-speaking and Spanish-speaking workers would be available. Picking in-

(Continued on page 48)

First Choice for Fruit

ENGINEERED FOR

ENDURANCE CONVENIENCE ECONOMY...



YOU'LL BE GLAD YOU WAITED

Perhaps you are one of the thousands who have waited for a Case tractor, rather than take second choice. Your waiting, while Case factories carried out government orders, was part of the price of victory. By your patience you can enjoy Case convenience and economy through the years of the long pull ahead.

Case tractors are bought mostly by men who know tractors best. After using tractors for years, often of several makes, they know the things that count most in a tractor. They value the Case quality of ENDURANCE because it keeps performance up, keeps costs down.

For tree culture they particularly like Case "toe-touch" turning brakes and the full-swinging, self-locking drawbar that make short turns easy with full load in loose soil. They like the wide speed-range of Case engines and gears that gives a speed for every job from creep travel in non-stop spraying to swift, safe transport and highway hauling.



CASE

12 GREAT TRACTORS

Model "VAO," above, is smallest of three Case orchard tractors. There are also three All-Purpose sizes, four standard Four-Wheelers, and Vineyard and Truck-Crop Specials. See your Case dealer; write for catalog. Dept. A-13, J. I. Case Co., Racine, Wis.



A Million Children

The school taxes paid by railroads enable more than a million children to go to school. In many rural areas they constitute half of all the school funds.

And this aid to education is only one of many ways in which the public benefits by railroad taxes. For these are *real* taxes—general taxes on railroad-owned property which go toward the support of public health, public safety, national defense, maintenance of the courts, and all other government activities and services.

No part of railroad taxes goes

for building and upkeep of railroad tracks. The railroads do that themselves and, in addition, pay taxes on their tracks and other property, thus helping to build and maintain the highways, airways, and waterways used by other forms of commercial transportation which compete with the railroads for traffic.

It is a matter of pride with the railroads that they not only pay their own way as transportation companies but also are able to help in the education of American boys and girls each year.

AMERICAN RAILROADS

PROS AND CONS OF DIVERSIFICATION

(Continued from page 13)

another reason for failure of some two enterprise farms. If the rush season in both happens to come at the same time and only one crew is available, something must be neglected. Spraying in Massachusetts covers a period of about three months. Imagine what happens on a one crew farm if a critical spray must be applied the same day a new lot of baby chicks is clamoring for attention. But we ought not to decide against diversification just because such conflicts sometimes occur. What appears to be a "Con" in our discussion may prove otherwise, since a wisely chosen second enterprise may, on a yearly basis, be just what is needed to provide more efficient use of the available labor.

We come now to the "Pro" side of the question. The diversified farm is quite ideal, provided expansion is along the right line and is not carried too far. There are at least three reasons why fruit growers should diversify, particularly along other fruit lines.

(1) *More efficient use of land, equipment and labor.* The tendency to set fruit trees on an extensive area without regard for soil or site, is all too common. The orchard planted in a frost pocket or on a poorly-drained soil is a good example. It is easy to keep a fruit tree alive over a long period of years. But it is not so easy to get large, annual crops. Taking into account the variation in elevation, slope, soil texture and drainage on the average farm, good management requires careful selection of the areas best suited to each crop, as for example, apples. Having planted apple trees on the best areas, what should be done with the rest of the farm? Here is where other fruits or vegetables fit in. On an area which may be a little too steep for apples, grapes offer possibilities. Other low lying areas where frosts are a menace, assuming good drainage, may be used for vegetables or for blueberries. On a fruit farm, diversification with other fruits in accordance with soil adaptability and available help, is generally preferable to an expansion into the field of livestock or poultry.

Concerning equipment, the same sprayer and duster will serve to protect the apple, pear, peach, and other fruit trees. The sprayer will also help to provide insurance against farm fires. Other pieces of farm equipment will also find more justification when they contribute to the growing and marketing of additional money making crops. The apple grower is extremely busy at certain

seasons. But there are slack times when the regular help is not urgently needed for any essential orchard task. At such times other fruit plantings will help to provide profitable employment.

(2) *Diversified farm products help to hold customers.* For the farmer who ships all his produce to a commission house the idea of appealing directly to the consumer may have little appeal. But if farm products are marketed at a roadside stand or by direct delivery to the consumer, there is a distinct advantage in selling more than one product. The farmer who produces only apples will be able to appeal to the buyer only while he has apples to sell. If he also has peaches, strawberries, and one or more other fruits, he has a greater opportunity to attract customers. It is not the writer's intention to urge the growing of all kinds of fruits and other farm produce, but rather to balance the production in such ways that land, equipment and labor may be utilized to full advantage. With an increase in automobile travel, selling at the door is certain to increase, provided the producer has what the consumer wants to buy.

(3) *Diversification insures a more regular income.* The writer has purposely left to the last the strongest argument in favor of the diversified farm. A bumper crop of apples followed by a crop failure leaves the specialized apple grower in a difficult position unless he has either a tidy savings account or another job to which he can turn his attention for a livelihood. If in addition to a commercial apple orchard, a grower also has a peach orchard, he doubles his chance of getting an income every year. In Massachusetts, many such farms harvested a good crop of peaches in 1945, even though the apple crop was very light owing to unfavorable weather at blossoming time. We are not advocating that every apple grower should have a peach orchard. Instead, he should consider the question of which crop or crops can and should be grown in addition to apples to cushion the year when the apple crop is a partial failure. Peaches offer one possibility. We need more good peach orchards in New England to supply the local demand. If a prospective site offers promise of producing a peach crop three years out of four, the risk is well worth taking.

However, any expansion should be limited by the fruit grower's capacity for putting first things first as he grapples with the essentials of the new enterprise.

What Potash can do for you



1. SAVE LABOR

Grow your crop on fewer acres. Produce better pasture on which livestock can be turned earlier and kept longer. Prevent lodging of small grain and corn and make other crops easier to harvest.

2. INCREASE YIELDS

Thicken and strengthen the stand per acre. Enable crops to better withstand diseases and unfavorable weather. Make grain heavier and fruit larger and juicier.

3. IMPROVE QUALITY

Grow root crops that are more marketable in shape and size. Increase the feed value of forage crops. Improve the carrying and keeping quality of fruits and vegetables.

4. PREVENT SOIL DEPLETION

Maintain reserves of plant food in the soil. Produce good growth of nitrogen-producing legumes. Balance the crop's use of other plant foods.

See your official agricultural adviser about the use of potash on your soils. Write us for free information and literature on the practical fertilization of crops.

AMERICAN POTASH INSTITUTE

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Member Companies: American Potash & Chemical Corporation

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THE POTASH YOU ARE USING IS AMERICAN POTASH

Type of 6-engine Clipper Pan American World Airways will place in service in the future.

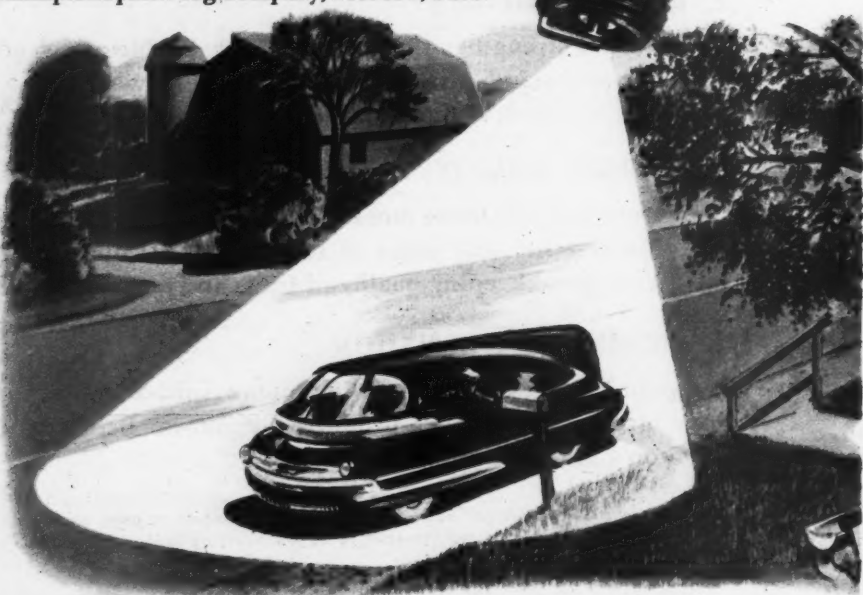


New Horizons...

IN SPARK PLUG PERFORMANCE!

Wartime necessity produced technological advances in Champion Spark Plugs which were outstandingly evident in the performance of the most advanced aircraft engines. Equally great strides were made in Champion Spark Plugs for *all* engines.

There are new horizons in spark plug performance for your present car, truck, tractor and stationary engines—if you insist on dependable Champion Spark Plugs. The unequalled research, engineering, manufacturing facilities and experience exclusive to Champion are solidly back of every Champion Spark Plug, for *every* engine. That's why it will pay *you* to insist on Champions—the automotive spark plugs with aircraft prestige and efficiency. Champion Spark Plug Company, Toledo 1, Ohio.



CHAMPION SPARK PLUGS

REPLANTING PEACHES

Continued from page 12)

ditions that favor its development are particularly apt to occur where an old peach orchard is replanted on an acid coastal plain soil. In addition to being acid as a result of insufficient liming and the use of sulfur sprays, such orchards are usually low in organic matter due to frequent cultivation and to a sparse growth of cover crops. Liberal use of pulverized limestone and complete fertilizer incorporated through the soil has always corrected the condition known as "false little peach."

But rebuilding the fertility of an old peach orchard soil involves more than the application of lime and 1,000 pounds of a complete fertilizer per acre. It includes the replenishment of organic matter lost by frequent cultivation and by erosion. It also includes the assimilation of the replenished organic matter and the fertilizer and lime applied to the soil. This requires time—usually one or more growing seasons in New Jersey. Unless adequate time is allowed for this assimilation process, it appears necessary to use relatively large amounts of fertilizer. If manure is available, the time required to rebuild the fertility of the soil for peach is considerably reduced.

The time to start rebuilding the soil in preparation for replanting is a year, or better two, before the old trees are removed. If the soil, 18 to 24 inches below the surface, is between pH 5.0 and 5.5, at least two tons of pulverized limestone should be applied to each acre of sandy loam soil. This amount will be required to correct the acidity in the upper 18 to 24 inches of soil. Where the pH is 6.5 or higher, no lime is required. In addition to the lime, complete fertilizers in amounts corresponding to 1,000 pounds of a 5-10-5 should be applied per acre. These amounts of lime and fertilizer are required for New Jersey conditions; elsewhere the materials and rates must be adjusted to fit the soil requirements.

After the old trees are removed, efforts should be made to obtain good stands of cover crops and especially the deep-rooted types. In addition to helping to replenish the lost organic matter, they play an important role in distributing nutrients through the soil body.

It has always been found possible at the New Jersey Experiment Station to successfully replant a peach site immediately after the removal of the old trees. It is advisable, however, to plan ahead, and to allow sufficient time to rebuild the fertility in the old orchard.

APPLE SCAB

(Continued from page 30)

Applied to dry foliage immediately after a scab rain, liquid lime sulfur, 2-100 may prevent the appearance of lesions. This after-rain effect of lime sulfur continues until about 50-72 hours after the start of the scab rain, depending on the temperature. From the end of this 50-72 hour period until the scab breaks through the surface of the leaf, some ten days later, the fungus is out of reach of fungicides, and lime sulfur is no more effective than other materials. All that any of them can do at this stage is leave a residue as protection against infection in the next rain.

The practical plan for most growers is to try to have all foliage covered with sulfur ahead of each anticipated rain. Radio, newspaper, spray service warnings and a barometer may help you anticipate what is coming. Dusting may be employed to hasten the rate of coverage. It is of great practical help to know, however, that if you are caught you can apply elemental sulfur or dust sprays during rain. Such treatments usually are made during light rain or drizzle or between showers.

Sprays During Bloom

Most years, a heavy spray just before blossoms open, will protect against scab throughout the bloom period, but it is difficult to cover a large acreage at exactly this stage. In 1945, serious spread of scab occurred during the prolonged bloom, which in some areas extended over 4 weeks. Admittedly, there is danger of reducing the set of self-unfruitful varieties like McIntosh by sprays or dusts during bloom. However, the author's experience shows that one blossom-time elemental sulfur spray or dust usually can be made without reducing yield, and where opportunity for cross-pollination is good, two such treatments may not reduce yield. In 1945, some McIntosh crops were lost from scab on the blossom-stems. However, even disease-free, unfrozen, hand-pollinated McIntosh blossoms failed to form fruit in some cases. Blossom-time sprays or dusts were invaluable in 1945; in fact, good scab control was rare without them in New York. In varieties that usually set ample or excessive numbers of fruits, the risk of hurting the yield by an elemental sulfur spray or dust during bloom is not great. Lime sulfur is too caustic for such sprays. Bordeaux mixture during bloom is more likely to reduce the set or russet the fruit than are elemental sulfurs. Of course, all poisons like lead arsenate, nicotine, DDT, etc. must be omitted because of danger to bees.

(Continued on page 40)

DDT

STANDARD OIL COMPANY

(INDIANA)

Announces

A BETTER ORCHARD SPRAY

*which gives you all the benefits of DDT
with greater safety*

In this new summer spray the DDT is actually dissolved in the oil. It sprays evenly, and therefore controls codling moth with a lower dosage. That means increased safety for trees, and less residue on fruit.

In addition to the better codling moth control, the oil portion of this new spray prevents the red mite infestations that frequently followed the use of DDT.

Safety to trees and fruit, freedom from worries about red mites—you get these added advantages when you control codling moth with the new summer spray oil which scientific research has developed. Standard Oil representatives will give you further information.



*boots
wear
from the
inside
out!*



Yes . . . that's a fact. Boots do wear from the inside out. And that's one reason Hood boots give extra long service. For, in spite of present restrictions, Hood farm footwear is still made with the same tough inner construction that has made it famous. Buy Hood rubber footwear next time and see what this means in longer life and economy.

HOOD RUBBER COMPANY
a division of The B. F. Goodrich Company



LOOK FOR THE HOOD ARROW WHEN YOU BUY THEM

APPLE SCAB

(Continued from page 39)

Materials

For spring sprays against scab, the flotation sulfur pastes, because of their fine particles and relatively low cost, are desirable. Dry wettable sulfur materials are coarser and wash off a little faster but often are effective. Especially for spraying in the rain, paste sulfurs, free from wetting or spreading agents, are preferred as the spreader may lower the deposit and increase the washing-off of the sulfur. Sprays applied during rain may or may not leave enough deposit to protect through a later rain. An increase of 30% in pounds per 100 gallons over the amount used on dry foliage, would be a good precaution. An oil-type sticker, like Orthex, may be helpful for sprays in the rain, but good results often are obtained without it, especially with paste sulfurs.

Sulfur dusts for protection against scab rose in the esteem of growers who used them intelligently in 1945. Even when applied from just one side of the tree they gave a considerable measure of protection. The light weight of dust and dusting machines was especially appreciated when mud was so general. It seems worth while to get dust of the finest particle size now available.

Lime sulfur 2-100 applied to established scab spots on leaves, tends to "burn out" the fungus and kill most of the leaf tissue at the site of the spot. Elemental sulfurs do this only in very hot weather. The "burning out" often is incomplete, however. Applied to leaves carrying numerous scab lesions, lime sulfur often does more harm than good.

While the use of lime sulfur is diminishing because of its injurious effects, it would be ill-advised to say that it has no place. If sprays are applied only when trees are dry, and without regard to infection periods, experiments usually show a higher percentage of scab-free fruits with lime sulfur than with the elemental sulfurs. This is because of its after-rain and eradicant effects. There is usually some reduction in yield from lime sulfur the current season or the next. This may be minimized if the spraying is not very heavy, is done in cool, relatively dry weather, and early in the season. Some varieties like McIntosh are more resistant to spray injury than others like Baldwin. Vigorous trees recover more rapidly than weak ones. The eradicant and after-rain effects of lime sulfur have been mentioned. When lime sulfur dries on the foliage or fruit it leaves a protective sulfur deposit which is similar but not superior to those left

AMERICAN FRUIT GROWER

by paste sulfurs.

There are numerous cases where the "burning out" of foliage scab with lime sulfur early in the season, increases the percentage of scab-free fruits. If foliage scab is abundant, lime sulfur may cause severe burning and hasten the dropping of leaves. Diluting the lime sulfur to less than 2 gallons in 100 may reduce "poly-sulfide injury," but increase arsenical injury. On the whole, the use of this potent fungicide calls for discretion. Its greatest value is for emergencies, or for use by those growers who do not time their scab-control sprays accurately.

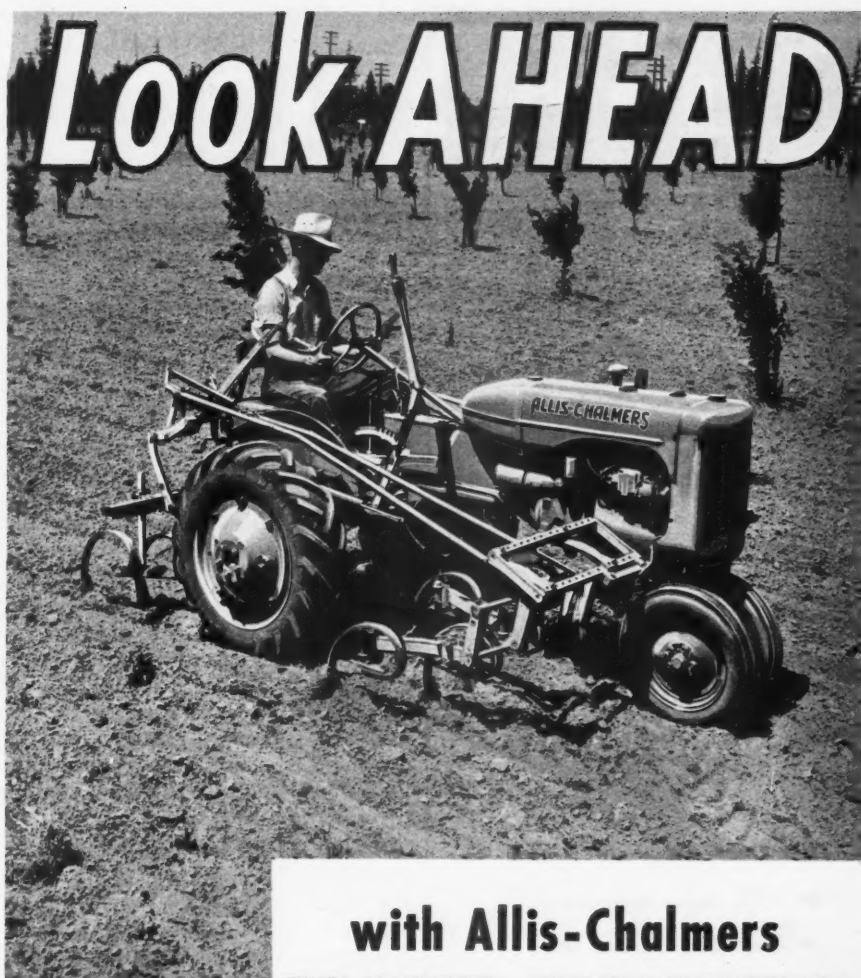
Lime sulfur is a true solution, not a suspension. If applied during rain, most of it washes off, leaving a poor deposit. If applied when it is not raining but on wet foliage, it sometimes causes severe injury. The same is true when it is applied to dry foliage if humidity and lack of air movement make the spray dry slowly. If the temperature is above 80°F., the injury is likely to be excessive even with good drying conditions. Sprays that soak the under surfaces of the leaves, such as codling moth applications from the ground or low platforms, are the ones that cause the worst lime sulfur damage. It seems reasonable to hope that some organic fungicide may be developed that will prove superior to lime sulfur in effectiveness and safety, but it takes years to evaluate new materials adequately.

Since elemental sulfur sprays or dusts may be applied to either wet or dry foliage, the grower has far more hours suitable for their application than for lime sulfur, which is restricted to dry foliage. Growers who had only lime sulfur on hand in the spring of 1945 were handicapped because there were so few hours when the foliage was dry. When time to do the work is the crucial factor, the use of dusts or elemental sulfur sprays sometimes gives better control than lime sulfur. The wise grower will devote some winter time to learning the precise relation of rains to scab infection and to learning the characteristics of the fungicides. Then, starting the season with both an elemental sulfur and lime sulfur, he will be able to choose whichever best meets the conditions of the moment.

Late-season Sprays and Machinery

The foregoing discussion has dealt almost entirely with the primary scab infection period extending from the appearance of green tips until 1-4 weeks after petal-fall, since it is during this period that the scab battle usually is won or lost. Usually, a fungicide must be included in the

(Continued on page 49)



with Allis-Chalmers FRONT-MOUNTED Tractor Implements



Model C SELF-GREASING Tractor

Sealed Reservoir bearings keep tractor automatically greased. Dual control accurately gauges depth of right and left gangs . . . independently. (Photo above—Spring Tooth cultivator attachment.)

The New NATIONAL FARM AND HOME HOUR

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NEWS—direct from U. S. Department of Agriculture. MUSIC—loved by all American farmers. SPECIAL EVENTS—on the spot, when they happen.

Consult your newspaper for time and station.

In combined orchard and field operations, there is new working ease and efficiency now available. For example, the logical trend of cultivator and planter design has been *forward*. When implements are mounted forward on the tractor, rather than pulled behind, they need no wheels of their own. They cost less. Furthermore, they can be attached quickly and controlled automatically by tractor power.

A-C FRONT-MOUNTED planters, cultivators, fertilizer attachments and rotary hoes represent still another step forward . . . *ahead of the driver's seat*. Front-mounted implements are brought within your natural line of vision. You watch the row ahead easily and naturally . . . never twisting to look behind.

Forward vision is an invaluable feature for precision planting, fertilizing and cultivating young plants. You'll find it not only *pays* to "look ahead"—it's a *pleasure*. Front-mounted implements are a new adventure in comfort . . . a promise of Better Living to come for the family farm with an orchard.

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New and Improved

**ALORCO
CRYOLITE**

is More Effective

**FOR CONTROL OF
CHEWING INSECTS**

Because . . .

- 90% Active ingredients
- Controlled particle size
- Wets and mixes readily
- Maximum, uniform coverage
- Greater adhesion
- Harmless to most foliage
- No effect on soil balance
- Excellent suspendibility in spray tanks and lines
- Compatible with insoluble type copper compounds, sulfur and other neutral fungicides, insecticides and diluents
- Proved efficiency

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NEW PEACH SHIPPING CONTAINER

(Continued from page 18)

each, the layers being separated by corrugated pads.

The significance to the peach growing industry of a container able to deliver to retail outlets a riper peach without incurring excessive damage may become increasingly apparent in the years immediately ahead.

This box, developed by the Produce Packaging Company and the Hinde and Dauch Paper Company, was introduced into the experiments during the 1944 harvest season, but the emphasis at that time was on other types of containers and only a few hundred of the cell boxes were shipped.

Approximately 3,000 of the half bushel containers were packed last season by the cooperating Millburg and Sodus Fruit Exchanges with "firm ripe" Berrien county peaches and sent through regular trucking channels to four A & P supermarkets in Detroit, a distance of approximately 200 miles.

These shipments continued over a period of three weeks, with 1,000 of the boxes being filled with Halehavens and the remainder with the later Elbertas. The cell-box peaches were sold in competition with those shipped in the commercially packed bushel basket, both being sold in the four experimental stores in container units and in "bulk," or by the pound.

Handling damage and general condition of the fruit in both containers were checked when the shipments arrived at the stores. Girls were assigned especially to the task of getting this data, checking rate and volume of sale from each container, and noting customer reaction or comment.

To compensate for the higher cost of the cell box and for the trouble of packing the box under experimental conditions, the fruit shipped in this container was priced 1 cent a pound higher than that shipped in the bushel basket.

Results of these extensive experimental shipments, in regard to both damage reduction and accelerated consumer acceptance, substantiated the somewhat surprising figures obtained the previous year.

Figures obtained during the 1945 season on bruising, as checked at the four supermarkets, are as follows:

Percentage of fruit shipped in the bushel basket showing bruise, 31.28; in the cell box, 4.04; percentage of unsaleable fruit in the bushel basket due to bruise, 5.37; in the cell box, none.

In an effort to compare the spread

of brown rot in the two containers, fruit remaining in one of the stores 24 hours after arrival was checked for six consecutive days with the following results:

Percentage of spoilage due to brown rot in the bushel basket, 16.2; in the cell box, 4.5.

A check of sample containers permitted to remain in a store, at normal store temperatures, for five days showed spoilage in the bushel basket from both bruising and brown rot of approximately 65 percent, while total spoilage in the cell box, due only to brown rot, had increased to slightly more than 15 percent.

Prevalence of brown rot in the 1945 Michigan crop was greater, incidentally, than in the crop of either 1944 or 1943.

It is significant that reports from the four stores indicate that not a single peach shipped in the cell boxes was found upon arrival at the stores to be unsaleable as a result of bruising.

Reports from the four stores concurred in indicating a decided consumer preference for the riper fruit shipped in the cell box. Due to the fact, however, that fruit from one or the other of the containers was sometimes sold out before store closing time, a perfect comparison of the consumer acceptance factor was not obtained. The following reports from two of the stores on consecutive day sales indicate the trend:

Store No. 1, bulk or pound sales only (exclusive of container-unit sales) for a period of six consecutive days, from the cell-type box, 1,368 pounds; from the bushel basket, 858 pounds.

Store No. 2, bulk or pound sales only for a period of 13 consecutive store days, from the cell-type box, 3,781 pounds; from the bushel basket, 1,985 pounds.

It should be noted again that the price of fruit in the cell box was maintained at 1 cent a pound higher than that in the bushel basket.

Customers selecting peaches from the cell box in preference to the cheaper fruit in the bushel basket cited as their reasons in the great majority of cases either the greater degree of ripeness, the absence of bruises, or both.

This price differential of 1 cent a pound was considerably greater than would seem to be necessary if the cell box were being manufactured and packed in volume. Makers of the box express the opinion that the

(Continued on page 44)

AMERICAN FRUIT GROWER

AN OHIO FARMER GROWS CHESTNUTS

(Continued from page 20)

to stratify the seed in tubs with perforated bottoms with moist sand, stored in his fruit cellar. The chestnuts were planted in early spring in what was formerly a truck patch. The nuts were planted in rows 12 inches apart, to facilitate weeding with a hand cultivator. The nuts were spaced 6 inches apart in the row, which provided ample space for the seedling to develop into a sturdy 2-year-old tree of suitable size for transplanting. The nursery now contains over three thousand 1- and 2-year-old chestnut seedlings. Each year the market for Chinese chestnut planting stock has increased, until now only half of the orders he receives can be filled. His entire output of Chinese chestnut planting stock is produced on the farm as a sideline to regular farming and demonstrates how readily chestnuts lend themselves to propagation by seeding.

In the Bureau of Plant Industry, Soils and Agricultural Engineering of the United States Department of Agriculture, the investigation of Asiatic chestnuts is conducted by two Divisions. The Division of Forest Pathology is selecting and breeding blight-resistant chestnuts, is establishing blight-resistant forest chestnut plantings, and is cooperating with the Division of Fruit and Vegetable Crops and Diseases in the development of blight-resistant chestnuts for orchard purposes. Both Divisions are cooperating extensively with other Federal, State, and private agencies in testing Asiatic chestnut strains and hybrids for orchards throughout the eastern United States and also on the Pacific Coast. Thus far, the use of Asiatic chestnuts for forest plantings can be recommended on an experimental scale only. However, their high resistance to blight under the best growing conditions and their development of forest-tree form and their satisfactory rate of growth warrant further test plantings in farm woodlots and in forests.

Jesse D. Diller, co-author of this article, is Associate Pathologist of the Division of Forest Pathology, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration at Beltsville, Maryland. Oliver D. Diller is Associate Forester at the Ohio Agricultural Experiment Station, Wooster, Ohio, and Cooperative Agent of the Division of Research, Soil Conservation Service, Washington, D. C.



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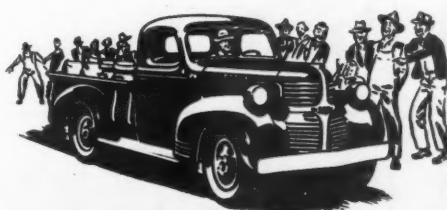
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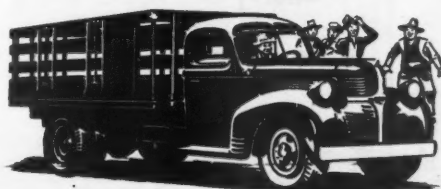
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OTTAWA MFG. CO., D132 Forest Ave., Ottawa, Kans.

PEACH CONTAINER

(Continued from page 42)

cost of two of these half bushel boxes could be reduced through volume production to approximately the cost of a single bushel basket and reliner. Volume packing of the cell box would require alterations in packing house operations, but stopwatch timing of the various operations in packing both the containers indicate that the difference in work hours involved would be negligible.

Average time required for the bushel basket packing operations—putting facing liner and pad in place, ring facing, filling, and putting on, covering and fastening the basket—was 4 minutes and 10 seconds, with the basket being passed directly from one worker to another along the production line. The time required for a single worker to assemble, fill and seal the cell box ranged from 1 minute 50 seconds to 2 minutes 15 seconds.

Other problems in packing house operations exist, however, if the cell box is used in volume. T. C. Stebbins, extension specialist in horticulture, who supervised the cell box packing at both the Millburg and Sodus exchanges, phrased one problem accurately by saying, "We can't just press a button and get all 2 1/4 to 2 1/2 inch peaches"—the size required by the half-bushel, 96-cell box.

Stebbins explains that packing houses will be obliged to "size peaches at the top as well as at the bottom—that is, grade out those larger than 2 1/2 inches as well as those under 2 1/4 inches—if the cell box is to be fully utilized.

Such a change in operation could be made practical through the use of boxes adapted to these larger and smaller peaches. To maintain the half-bushel standard weight, a cell box must contain 120 of the 2 to 2 1/4 inch peaches, while only 80 of the large 2 1/2 to 2 3/4 inch size would be required. Box manufacturers report that development of such containers present no difficulties.

In the experimental packing of the cell box this last season, only the riper peaches were selected from the packing house belt. Since peaches of sufficient ripeness constituted only a minor fraction of the peaches on the belt, efficiency in volume use of the cell box would require that the fruit be left on the tree until at the desired stage of average ripeness.

If this type package can be adapted for practical use in volume by packers and distributors to the end that a ripe peach is delivered to the housewife, growers will have an added reason for looking to the future with confidence.

AMERICAN FRUIT GROWER

CALIFORNIA PRUNING

(Continued from page 22)

stubbed. The object being that you want the sap pressure maintained and the location of the next set of branches determined by the upper stub cut.

The third year after planting, the same rule can be followed—pruning or cutting the leaders (main branches) according to their strength. Many pruners make that mistake. They cut back the leaders without knowing what determines the length of the leader. If the tree wants to grow let it grow as long as the new sprout is strong and long enough. If you cut it short, in spite of its strength, the tree will go into a large number of water sprouts. This third year's pruning will have to deal with a few prospective fruit spurs. Some trees go into fruit sooner than others. But if the tree has not been kept back by too severe pruning, the third or fourth year the tree should begin to produce fruit.

Another item that draws fire from orchard men and owners alike is in regard to an open center. I prefer a hollow center in an apricot tree to allow a maximum amount of sunshine and fresh air. Any old-timer knows that a tree crowded with brush in the center will have a tendency to produce dead twigs and spurs, as well as lack normal healthy fruit.

After the first few years of plotting the skeleton of the tree, the pruner may settle down to regulating a normal amount of fruit spurs.

This is done by regulating the leader (the last twig left on the end of a limb). The strength of the tree and the number of water sprouts is determined by the length of that leader. If that leader is left uncut as was done in a university method tried here in California, the water sprouts are discouraged and the fruit spurs are over-encouraged. This lack of water sprout shade will expose the fruit to the sunshine causing sunburn cracks and spot, etc., and the overabundance of fruit spurs will cause an overabundance of fruit to set in a normal year causing expensive thinning. The long uncut leaders will in time cause long, lanky weak limbs which have a tendency to break easily. The third year of this kind of pruning causes the tree to produce a heavy crop of small, scabby, sunburnt fruit. On the other hand, normal pruning with a cut back leader produces the necessary water sprouts to shade and protect the fruit while at the same time encourages a normal number of healthy fruit spurs.



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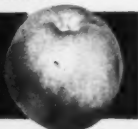


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NEW

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The guard, which will fit any young tree up to 3 inches in diameter, is a strong, curled fibre sheet, chemically impregnated. No tying or binding is necessary since the guard locks securely into position.



1946 MERCURY •

Mechanical changes on the engine of the 1946 Mercury, built at the Rouge plant of the Ford Motor Company, include such outstanding features as tri-alloy bearings, crankcase ventilation, oil filter and air cleaner and oil cleaner as standard equipment, improved oil pump, four ring aluminum pistons, interchangeable cylinder heads, etc.

All new Ford and Mercury cars are equipped with distributors that virtually are immune to the effects of water, mud, slush, condensation, tropical heat or sub-zero temperatures.

The new Mercury features a wide variety of changes in exterior and interior body styling as well as in mechanical improvements. Outstanding exterior feature is the front grille, consisting of die-cast vertical louvers extending across the front. A heavier, lower and wider appearance is further enhanced by a middle insert in the hood.

- TREE GUARD
- 1946 MERCURY
- BAG DUMPER
- BELT CONVEYOR

Do not hesitate to write the New Products Department, AMERICAN FRUIT GROWER, 1370 Ontario St., Cleveland 13, Ohio if you want information on any of the products shown below. Your request will receive prompt attention!—Editors.

BAG DUMPER •

The Ritchie Bag Dumper for lifting and emptying heavy bags has been announced by ASCO Manufacturing Co. Operating on a 1/4 horsepower electric



motor, the machine will quickly lift and empty anything that comes in bags up to 350 pounds.

An automatic shut-off switch stops the motor at top and bottom positions of the lift. The upward lift takes 10 seconds, with 8 seconds to lower.

BELT CONVEYOR •

The Standard Handibelt, a product of the Standard Conveyor Company, is an all-purpose inclined, declined, or horizontal portable belt conveyor designed for



carrying bags, boxes, crates, cartons and many other commodities. It is adjustable to every conceivable elevation and angle within its scope and has ample capacity for 110 lb. bags or boxes or a continuous load of 20 lb. per foot.

AMERICAN FRUIT GROWER

ORCHARD ACCOUNTING

(Continued from page 15)

for comparing actual performance with budget requirements. This is a long step forward in eliminating the guess work and witchcraft that have been all too prevalent in simply "reckoning" in an informal way.

Problems in the Use of Orchard Accounts

While the problems of using orchard accounts are many, only three will be singled out for attention here. These are:

1. Recognition of the need for keeping records.
2. Use and study of records.
3. Limitations of records.

Recognition of the Need for Keeping Records

If the orchardist relegates the keeping of records to evening work or rainy day activity, chances are he is beaten before he starts. It is only among those growers who recognize the keeping of records as an operation every bit as important as pruning, spraying, or fertilizing that this job has received proper recognition.

Use and Study of Records

It has been indicated that record keeping may be just another irksome chore or it may be used as a "compass" in helping growers chart their plan of action. This means that they will have to give constant watch and study to the interpretation and use of records. Such an approach calls not only for knowing what happens (the recording of events) but also for an understanding of why events happen and how they can be changed to the advantage of the grower.

Limitations of Records

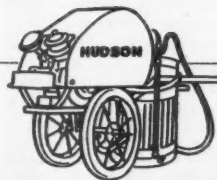
Useful as records can be in recording events and in charting future operations, it must be recognized that they have definite limitations. For instance, on farms where orcharding is one of several enterprises it would be a mistake to measure the profitability of these enterprises on the basis of net returns per acre—a practice sometimes followed. An enterprise that uses labor and equipment at a time when these items are not required for orchard operations has considerably different cost rates than has an enterprise competing directly with the orchard. This same situation applies to evaluation of variety performance. The extent to which Yellow Transparent, Jonathan, and Staymans, for example, may compete with or complement each other is not clearly shown in mere consideration of production or gross and net returns per acre.

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to win this year's battle on pests

"Well begun is half done." Make that good beginning now by going over your spraying equipment. Replace worn-out or inefficient units with HUDSON Sprayers. HUDSON, you know, is the line that's backed by over 40 years of experience in manufacturing the best, the most efficient sprayers. Designed to assure "perfection of application," built to operate fast and easy and to give many years of care-free service, HUDSON Sprayers can help you win this year's fight on orchard diseases and pests. Ask your dealer for full details on HUDSON Tested and Proved Sprayers.

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Es-Min-El is now sold in convenient 5 lb. and 100 lb. bags. Write us today for the name of your dealer.

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Catalog contains information on construction features and uses of Rapid Wheel Gravity Conveyors together with complete specifications and data on standard accessories . . . also shows on-the-spot photos of Rapid Wheel Gravity Conveyors in action on all types of conveying jobs.

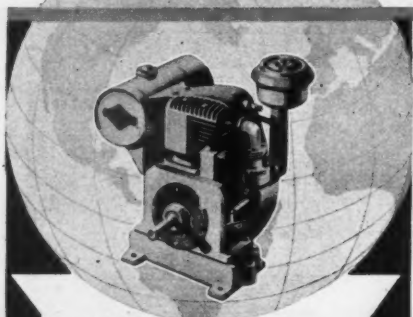
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• EDWIN C. TYSON •

EDWIN C. TYSON, well-known orchard supply dealer of Flora Dale, Pennsylvania died at the age of 81 years on November 21st.



EDWIN C. TYSON

Mr. Tyson devoted most of his life to fruit growing, and at one time, operated the largest orchard supply business in the East. During the war years, he made strenuous efforts to obtain critical materials for his many friends located in every State in the United States. He was a success because he understood the business of fruit growing.

STATE NEWS

(Continued from page 35)

structions were printed in German and Spanish, as well as in English.

There are many different ways of doing the various operations involved in picking. Before we could give workers intelligent instruction, it was necessary for us to decide upon which way to do these various operations. Group meetings of hort leaders and foremen were held for this purpose. Immediately following these meetings, instruction classes were conducted in the orchard. A group of workers was brought by the orchardist to the place of instruction where 30 minutes were spent in explaining, demonstrating and having the workers go through the various operations. Interpreters were on hand when needed. Those who were to supervise the pickers were also present. As soon as one group was finished, another came to the place of instruction. It was therefore possible to instruct as many as 400 workers in one day.

Conducting instruction and demonstration classes was only the beginning. Orchardists provided close supervision of the pickers so that in a short time they understood just how the job was to be done. With continued supervision the pickers soon acquired reasonably good picking technique. In many instances these inexperienced pickers when they left the instruction class began picking almost like experienced ones. The orchardists agreed that one supervisor should not be required to supervise more than 15 to 20 pickers.

Of very special interest to fruit growers in the Northwest is the outlook for the fruit business. Every possible attempt is being made to eliminate waste motion and unnecessary losses. An example of what is being done to prepare the industry for whatever competition may be ahead is the marketing and advertising program discussed at the annual meeting of the association. The purpose of this program is to streamline orcharding, marketing, and advertising operations in such a way that apples of supreme quality will be produced and placed in the hands of consumers in perfect condition.—*John C. Snyder, Extension Horticulturist, Pullman.*

NATIONWIDE FRUITS

Peaches

(Continued from page 17)

Commercial possibilities were found in five late blooming varieties which have given consistent production for several years. These are Vedette, ripening about July 15, the most highly productive and of good quality; Viceroy, Eclipse and Rochester which ripen about July 18, and Rio Oso Gem which produces about mid-August. The latter is recommended for extending the marketing season where proper moisture conservation is practiced. All five varieties are classed as freestones, though the flesh of Eclipse sometime clings.

The season could open, Randolph said, with Early Wheeler and Uneeda, the former being the leading commercial producer in the Montague section, but not consistent, followed in general order by Marigold, Early Rose, Oriole, Golden Jubilee, Fair Beauty, Golden Beauty, Vedette, Carman, Viceroy, Eclipse, Rochester, Halehaven, the popular Elberta (but not a consistent producer). Frank, Rio Oso Gem, Frankie, and Wintercheck, the latter variety extending the peach season to the middle of October.

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REPLANTING APPLE ORCHARDS

(Continued from page 12)

from this long experience: First you must maintain a good soil, never removing hay from the orchard, but rather drawing in mulch from the outside. Never use alfalfa as a sod in dry years, since it seriously affects the moisture supply. Mow twice a year to keep down the growth of weeds. Keep poisoned bait around decaying stumps. See that sprouts from apple stumps are cut in August. Avoid heavy pruning of young trees and grow fruit buds instead of water sprouts. In future plantings plant farther apart—forty by thirty-five feet apart. Give your trees more root pasturage and air circulation. Keep one-third of your tilled land in sod. Trees are slower in starting good growth when planted near old stumps. This growth can be helped by using two pounds of nitrate per tree the second year. It is easier to spray and harvest an orchard in sod than one that is cultivated; also, fruit colors better and wood matures and stands the winter without damage. An orchardist needs to be alert and ready to change a practice when circumstances warrant it.

I have reached the conclusion that if the practices described above are followed, the soil is constantly improving and you are growing good crops of apples. This is the kind of conservation needed for all of our crops.

APPLE SCAB

(Continued from page 41)

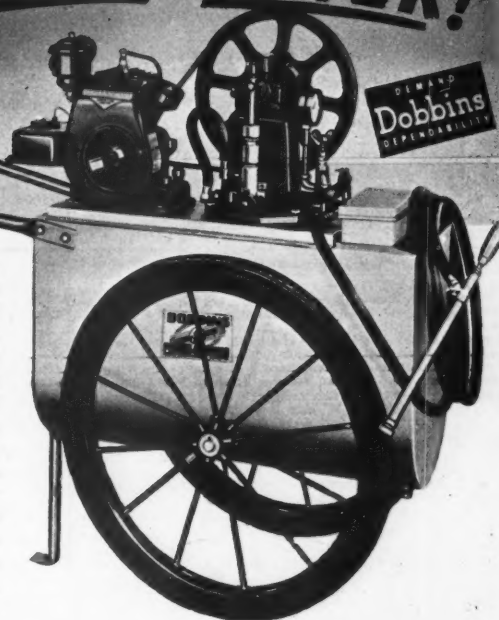
cover sprays. It is of tremendous help if scab has been held at so low a point that its control can be relegated to a secondary place. When this is the case, one may consider reducing the amount of elemental sulfur per 100 gallons to reduce the risk of cheek-scald on the fruits and the amount of visible residue, or switching to weak Bordeaux, to a mild copper material or an organic fungicide for control of diseases not held well by sulfur, or for the sake of compatibility with other constituents of the spray mixture. By summer, it usually is necessary to give first attention to codling moth control.

Purposely, the highly important topics of the technique of applying fungicides for scab, and the machinery now available or soon to come on the market, have not been touched. These will form the basis for another article in the next issue.

JANUARY, 1946

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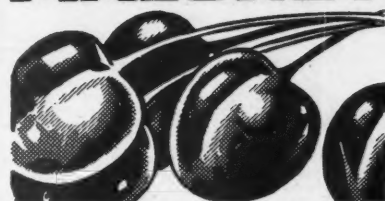
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Jan. 16-17—Annual Convention of the Tennessee State Horticultural Society at the New Southern Hotel, Jackson.—G. M. Bentley, Sec'y-Treas., Knoxville.

Jan. 16-18—91st Annual Meeting of the New York State Horticultural Society at Convention Hall, Rochester.—Roy P. McPherson, Sec'y, Le Roy.

Jan. 18—Winter Meeting of the Kentucky State Horticultural Society at the Hall Hotel, Mayfield.—W. W. Magill, Sec'y-Treas., Lexington.

Jan. 22—Annual Meeting of Vermont State Horticultural Society in the Memorial Auditorium at Burlington.—C. H. Blasberg, Sec'y, Burlington.

Jan. 22-24—Annual Meeting of the Pennsylvania State Horticultural Association in the Chestnut Street Auditorium at Harrisburg.—John U. Ruef, Sec'y, State College.

Jan. 22-24—Annual Meeting of the Maine Pomological Society in conjunction with an agricultural trade show at Lewistown.—J. H. Waring, Professor of Horticulture, Orono.

Jan. 23-24—Annual Meeting of the Missouri State Horticultural Society at the Daniel Boone Hotel, Columbia.—W. R. Martin, Jr., Sec'y, Columbia.

Jan. 29-30—The Annual Meeting of the New Hampshire Horticultural Society at the Carpenter Hotel, Manchester.—A. L. French, Sec'y, Henniker.

Jan. 30-Feb. 1—Eastern Meeting of the New York State Horticultural Society at Kingston.—Roy P. McPherson, Sec'y, Le Roy.

Feb. 4-5—Nebraska State Horticultural Society Annual Meeting.—E. H. Hoppert, Sec'y, Lincoln.

Feb. 6-7—The Annual Meeting of the Ohio State Horticultural Society will be held at the Netherland Plaza Hotel, Cincinnati.—Frank H. Beach, Sec'y, Columbus.

Feb. 7-8—Annual Meeting of the Idaho State Horticultural Association at the Hotel Boise in Boise.—A. Harold Davidson, Sec'y, Nampa.

Feb. 7-8—Seventy-Ninth Annual Meeting of the Kansas State Horticultural Society at Kansas State College, Manhattan.—Geo. W. Kinkead, Sec'y, Topeka.

Feb. 8-9—The 51st Annual Convention of the West Virginia State Horticultural Society at Martinsburg.—Carroll R. Miller, Sec'y, Martinsburg.

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Ramblings

OF A HORTICULTURIST

THE year 1945 has vanished into the unreclaimed past along with all the other years of infinite time. Some are yet wailing the troubles of the receding year. Others are looking to the months ahead with great anticipation and hope. The issues confronting the peoples of this land and others are momentous to say the least. Life and business are surging ahead at a rapid pace. War's end and the onset of our great industrial, social and political changes demand every ounce of our energy and almost every minute's time. But there must be a few minutes out of every busy day that each of us can devote to pleasure and relaxation of both mind and body. It is an essential to health and happiness, as well as to success in business.

So, it is the purpose of this column to give to the readers of this publication a bit of pleasure and enjoyment. This is to be the "sweet" part of that old axiom that says we must "take the bitter with the sweet."

As your Rambling Horticulturist goes about his business through the beautiful orchards of our country, he will attempt to record for you some of the strange things about fruit growing, about fruit growers themselves, and the many circumstances that vitally affect each.

Whether it be the weather, a personality, spraying, mice, or just a beautiful valley laden with nature's golden apples or oranges, it makes no difference, because there is always something peculiarly interesting about each. You may wonder how Mrs. Jones keeps the robins out of her cherry trees or how Bill Brown can run a "dirty" sprayer all day and come in so clean to supper.

Illinois peach growers may even want to know what kind of people raise those "green" Elbertas and ship them in on their market.

Or perhaps you would like to come along for an interview down in Washington with some Congressman or government official. And then maybe you would enjoy a hurried trip through some sprayer factory or large terminal market.

These little tidbits of every day living make an interesting story of



Pruning is good training for the mind as well as for the tree. It teaches one the art of vision and imagination. The pruner learns that he must have a reason for every cut he makes, for every limb removed. Pruning is indeed a stimulating part of orcharding.

orchard life on the side lines.

So when you get tired of reading about bugs and mummies overwintering on your trees, just turn here and relax for a minute or two, for I promise no "dry organic matter" but to enjoy myself with you.

Pruning

After doing up the chores about the farm this morning, I went into the shop and dug up the pruning saws and shears.

Shouldering the tools, I tramped out to the orchard in a spitting flurry of snow. Scanning the old orchard I spied a large Bellflower tree that looked as ragged as an old witch. I went to work on it, cutting and snipping away. After about an hour, I climbed to the ground and gave the tree a once-over before going on to the next. The pile of prunings beneath the tree made quite a brush heap, but I felt better, knowing that next fall the apples would look better and bigger.

There is something about pruning that even during the bitterest weather gives one a certain sense of pride

and joy. I suppose it's akin to the fatherly instinct which we all possess to some degree or other. We look upon our orchards in much the same manner as a father looks upon his children. In the first place we are entirely responsible for those trees and what they do. Consequently, we execute every effort to make them behave as good trees should. The lives of our children can be blighted and distorted by a thousand and one things. So can our apple and peach trees. When we prune a limb out that is growing across the tree or spoiling the tree's framework, we reap a feeling of gratitude.

Pruning is an art of the orchard that many of us should practice at least once in a while for the thrill it can give us for a worthy job well-done. I think the training and pruning of an orchard can do more to heighten a man's interest in fruit growing than any other single part of orcharding. This, because he so adroitly trains his own way of thinking while skillfully training his trees from youth to maturity.

Salute to THE FRUIT INDUSTRY

During 1944-45, Union Pacific paid tribute to American industry on its radio program "Your America", broadcast each week over a nation-wide network. Representatives of 70 major industries were given the opportunity to present the dramatic story of their respective industry's contribution to the welfare of the nation.

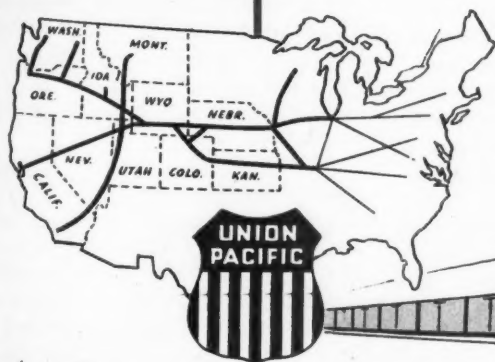
For example, on one program our guest speaker was Charles Irrgang of Chicago, representing the Fruit Auction Sales Company. Other guest speakers were Paul Armstrong of Los Angeles, California Fruit Growers' Exchange; Reuben Benz of Yakima, Wash.; the National Apple Institute; and W. C. Jacobsen of Sacramento, California Department of Agriculture.

Union Pacific—along with other railroads—was then engaged in moving vital wartime materials. Your industry and the nation generally knows what a tremendous task that was and how efficiently it was accomplished.

Today, Union Pacific is prepared to continue its assistance to your industry by speeding the distribution of peacetime commodities. Equipment, facilities and personnel are geared to provide unexcelled service.

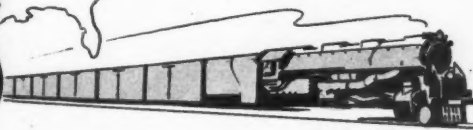
A staff of trained traffic men stand ready at all times to cooperate with you.

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★ Union Pacific will, upon request, furnish information about available industrial and mercantile sites in the territory it serves. Address Union Pacific Railroad, Omaha, Nebraska.



The Progressive

UNION PACIFIC RAILROAD

The Strategic Middle Route

EDITORIAL PAGE



A Clean Slate

THERE'S SOMETHING about a clean slate that gives one the urge to erase all the old troubles and to start anew. So it is with a new year, and twelve promising months—all in the future.

Looking ahead in fruit growing, it would seem that more is being done each year through patient observation and research to ease the grower's burdens and give him a little more time to enjoy the fruits of his labors.

In pest control, more and more research is being done by the agricultural insecticide and fungicide industry. Of the endless list of possible chemical combinations, many are being tested for the first time for possible pest control value. Inevitably this will add new and useful materials to the grower's armament, and plug more of the weak spots in his defense.

Research also goes ahead in methods for applying pest control chemicals. Sprayers and dusters are continuously being improved. Work continues with aerosols, fogs, mortars and airplane applications. More advances will follow.

Plant breeders continue to introduce more resistant varieties. Soil feeding methods are improved. Hormone researchers are progressing in weed control and plant stimulation.

The American grower at times has had a tough row to hoe with bugs and blights. He has seen both native and imported pests move in and multiply.

But the grower's future certainly looks brighter with each research-full month—and who knows what wonders this year will bring?

Tribute to John Chandler

IT IS WITH RESPECT and high esteem of a really great man that AMERICAN FRUIT GROWER wishes to pay tribute to John Chandler who performed such a praiseworthy job as Executive Secretary of the National Apple Institute during the critical war

years and in an era of scarcity, price control and federal regulation.

Mr. Chandler has always been a leader in the apple industry and it has been this unselfish donation of his time and energy that has won for him the admiration of the entire fruit field.

He brought to the industry his personal knowledge of grower problems gained since 1913 when he planted his own successful Meadowbrook Orchards.

Mr. Chandler lists among his achievements as a fruit grower the Directorship of the New England Council, President of the Massachusetts Farm Bureau Federation, the Massachusetts Fruit Growers Association, the Nashoba Apple Producers Association, the New York and New England Apple Institute, trustee of the Massachusetts State College, Chairman of the National Planning Committee of the National Apple Institute, as well as Executive Secretary of the Institute.

John Chandler has now left Washington for Meadowbrook Orchards, Sterling Junction, Massachusetts, but members of the industry are willing to bet that he'll never be a mere spectator in this apple business. He's a star player from the beginning. The wide knowledge he gained in Washington, plus his years of experience as a successful grower, will always win him an audience. When John Chandler speaks—fruit growers listen.

Buy Fertilizer Now

FRUIT GROWERS should buy fertilizers now to make sure that they will have them on hand when they are needed. Even though the supplies of raw materials to make fertilizers are estimated to be slightly more than in the 1944-45 season, there is the possibility of production and delivery congestions which will be more acute if growers wait to the last minute to order their fertilizers.

Although this early purchase program was started as a wartime necessity, the practice of farmers storing fertilizer during the winter months has demonstrated its practicability and advantage to the user. Last spring about 30 percent of all the fertilizer used had been in farm storage for at least a part of the winter. Early purchasers had provided against running short at planting time.

To protect the fertilizer and keep it in good condition throughout the winter, the following suggestions are offered: (1) Store fertilizer in a dry building where the flooring is above the ground. (2) Stack bags close together to reduce the absorption of moisture from the air. (3) Exercise care in handling fertilizer so as to avoid breaking bags.

The Buds of Trees

ONE DOES NOT need test tubes to make original discoveries. Much can be learned by just going into the orchard and looking. The orchardist who has a flair for plants must first observe critically, then interpret what he sees, then classify his knowledge, and finally record it for others to enjoy. A good winter day is as good for this exercise as one in summer.

Let's take a walk through the orchard, garden and woods with a razor blade and a hand lens and look at some buds.

In the first place, a bud may be thought of as an unelongated branch—or the free extremity of a branch. That is, it is a very short stem axis on which have already been organized little leaves, or flowers, or both. In spring they push into growth, and all the flowers of an apple and often all the leaves of a shoot were already present in the little bud during the winter.

A head of cabbage is a very large terminal bud while a Brussels sprout is a lateral bud. These are simply extremes in size and possess no bud scales as do the over-wintering buds of so many trees.

The flower or fruit buds of a peach, plum, or cherry contain flowers only and are called simple buds, while those of an apple, pear or quince contain both flowers and leaves and are called mixed buds.

If we look at an apple, we find that flower buds may be formed at the tip or terminal of a spur or a short or fairly long shoot. Varieties vary in this regard. But we also may find flower buds are formed freely in the axils of the leaves of the new growth, called lateral or axillary flower buds. These can be seen on Duchess, Golden Delicious, Baldwin, Wealthy and many other varieties but are frequently overlooked even by students of horticulture.

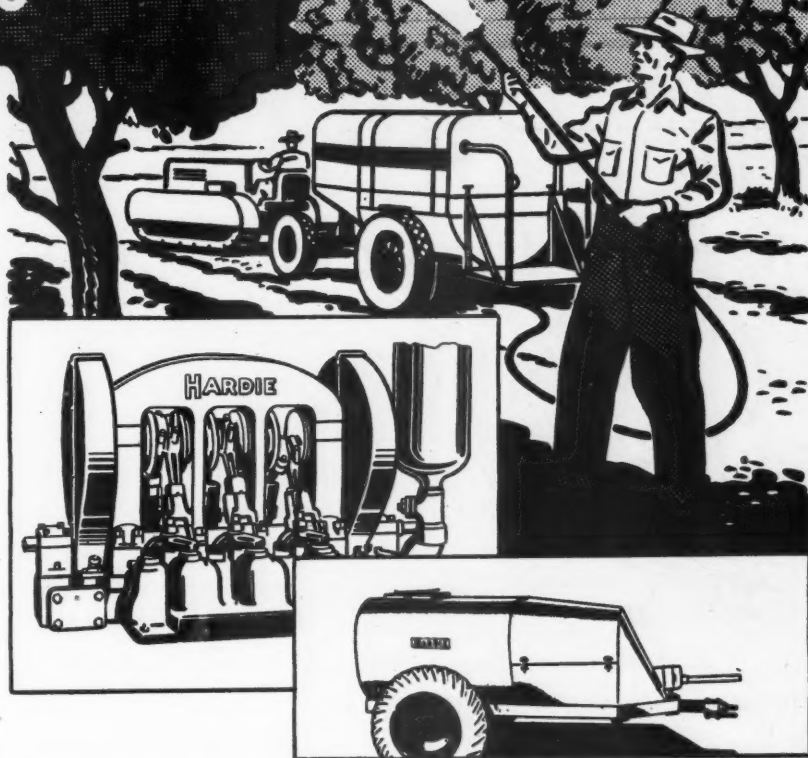
The peach, plum and cherry do not possess terminal flower buds but all of them are found on the side of the shoot or spur, that is, they are axillary. Similar situations are found on a peach tree. There may be one bud at a node and it may be either a leaf or a flower bud. There may be two or three side by side. Usually one is a leaf bud and one or two are flower buds, but this may be reversed.

The location and set of buds determines to some extent the amount and kind of pruning to be practiced. See how many of these situations you can recognize.

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FOR WORLD'S BIGGEST SPRAY JOBS

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Fruit Protection Schedule

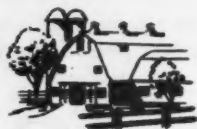
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centrated powder which appears to be the ideal answer to the problem of controlling *coddling moth*. It is compatible with Bordow, DN-111, "Mike" Sulfur and other fungicides and insecticides.

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Experienced growers know that proper fruit protection is based upon the use of the right material at the right time. And the best way to take full advantage of modern scientific knowledge is to make sure that you are fully informed as to the preparations available. See your dealer, local state experimental station—or write for the complete list of Dow DDT formulations.



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